

ORGANIZATIONAL AND FINANCIAL ASPECTS OF THE PROPOSED SAN FRANCISCO BAY AREA RAPID TRANSIT SYSTEM

Prepared for:

SAN FRANCISCO BAY AREA RAPID TRANSIT COMMISSION

STANFORD RESEARCH INSTITUTE

Applied Research Center of the West

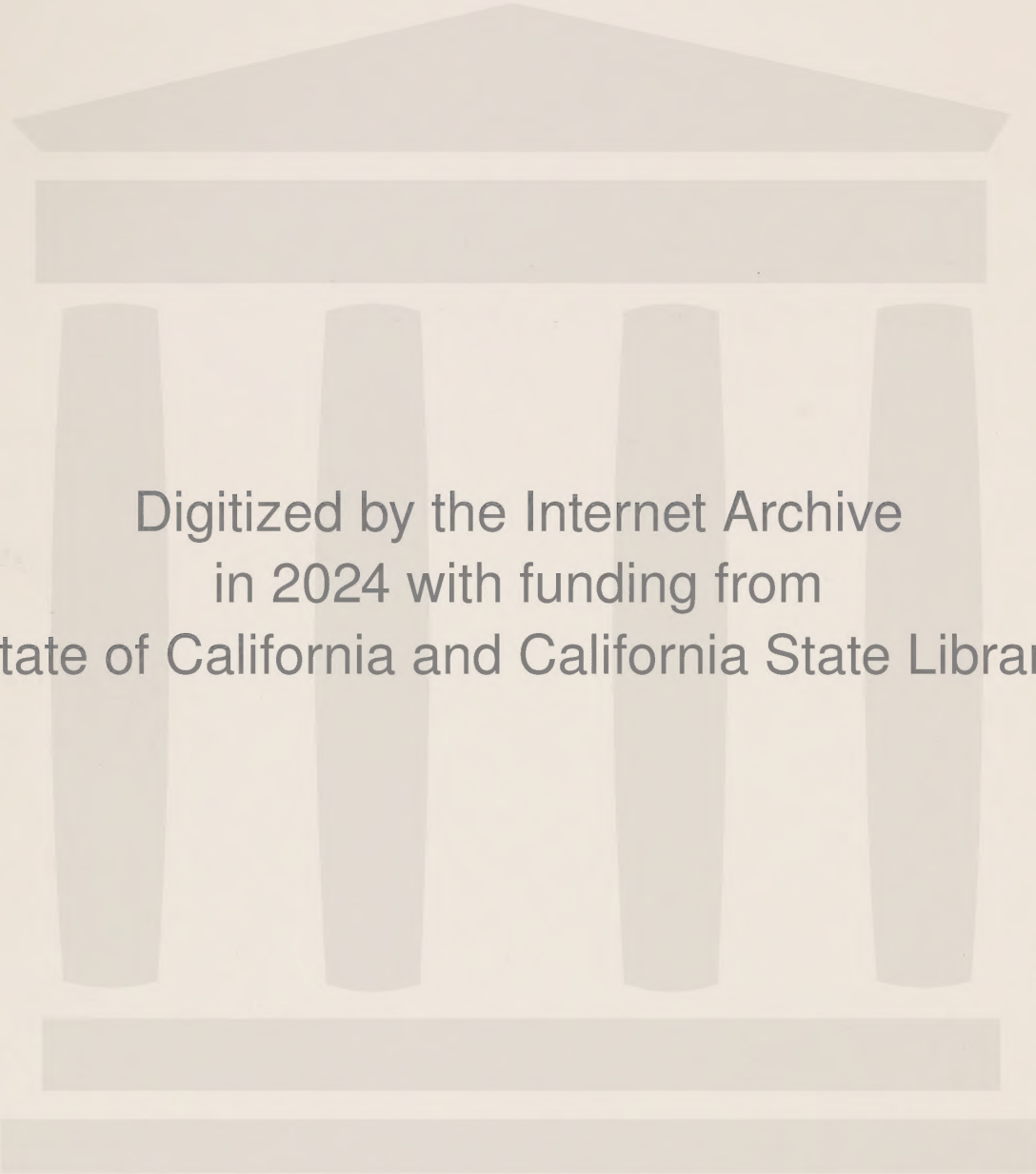
MENLO PARK, CALIFORNIA



INSTITUTE OF GOVERNMENTAL
STUDIES LIBRARY

DEC 20 1983

UNIVERSITY OF CALIFORNIA



Digitized by the Internet Archive
in 2024 with funding from
State of California and California State Library

<https://archive.org/details/C124878417>

February 1956

**ORGANIZATIONAL AND FINANCIAL ASPECTS
OF THE PROPOSED SAN FRANCISCO BAY AREA
RAPID TRANSIT SYSTEM**

By: J. Knight Allen Morgan Sibbett

SRI Project No. I-1247

Prepared for:

SAN FRANCISCO BAY AREA RAPID TRANSIT COMMISSION

Approved:

Charles L. Hamman

CHARLES L. HAMMAN, ASSISTANT DIRECTOR OF ECONOMICS RESEARCH

Weldon B. Gibson

WELDON B. GIBSON, DIRECTOR OF ECONOMICS RESEARCH

PREFACE

This study is an analysis of certain organizational and financial aspects of the San Francisco Bay Area Rapid Transit System as proposed by the engineering firm of Parsons, Brinckerhoff, Hall and Macdonald of New York in their report to the San Francisco Bay Area Rapid Transit Commission dated January 5, 1956. The engineering report is the result of more than two years' intensive study of the economic and physical factors of mass transit for the nine counties of the Bay Area.

In pursuance of the original program of research to be carried out under the direction of the Commission, Stanford Research Institute was engaged to make a correlated study on the financial implications and general framework for organization and operation of the system as planned by the engineering firm, taking cognizance of major alternative proposals as evolved in the engineering study. The economic evaluation of the proposed system is an integral part of the engineering study and is outside the terms of the present study.

The Commission has planned for a further study treating legal and legislative aspects of rapid transit for the Bay Area to be made by legal counsel and to be based upon the engineering and financial studies. Certain legal questions having a general bearing upon the feasibility of financing methods were referred to the Attorney General of the State of California for opinions and guidance (Appendix I); however, the present study does not attempt to make any analysis of the legal problems implicit in the organizational or financial program.

The objective of the study by Stanford Research Institute is to provide a factual basis and analytical approach for decisions which the Commission may make regarding the financing and organization of the proposed system. In carrying out this assignment the present report reviews and compares methods of financing in the light of their fairness and feasibility in covering original costs of the system, working capital, and any annual deficits of the transit organization. The impact upon different economic and geographic segments of the area resulting from the various ways of paying for the system is considered from the standpoint of financial capacity, practical means of distributing financial responsibility, and specific and general economic benefits as estimated by the engineering firm.

Basic features of a transit organization to accomplish the purposes to which the Commission addresses itself are analyzed to provide

background for decisions concerning the appropriate degree of private or of public ownership, control, operation, policy-making, and coordination with other public and private functions related to transit. The major influence of the financing problems upon the nature of the transit organization is recognized in this study.

The methods of conducting this research consisted in part of studies of existing and proposed transit systems in major cities of the United States, through analysis of reports and discussions with many operating and policy-making officers of transportation agencies. Reference was made in similar fashion to various district and authority-type organizations concerned with public functions other than transportation. Consultations were carried on with investment bankers and specialists in municipal and transit financing as well as with authorities in the fields of public finance and economics. The taxing and financial operations of the nine Bay Area counties and a number of cities in those counties were reviewed and analyzed.

An essential part of the research consisted in analyses of many combinations of methods in an effort to evaluate various approaches to the financial problem. The report can present only a part of the processes of this phase of the research; but a careful selection has been made with a view to setting forth the more realistic and effective means of meeting the problems.

Liaison has been maintained by the Institute for more than a year with the Commission, its Advisory Board for Fiscal Matters, and with the firm of Parsons, Brinckerhoff, Hall and Macdonald. A major part of the financial research was conducted while the engineering report was still in progress.

The principal parts of this report are: (1) a general summary, (2) a summary of the assumptions and findings of the engineering report with emphasis on the points which affect the financing and organizational analysis, (3) organizational considerations, (4) capital requirements and indebtedness, (5) sources of capital funds, (6) allocation of financial responsibility, and (7) an appendix containing comparative data on transit organizations; the fiscal situation in cities and counties of the Bay Area; economic and population data on the Bay Area as related to transit; financial and operating data on the proposed system; and opinion of the Attorney General of California on questions prepared by Stanford Research Institute.

Acknowledgment is gratefully made to Captain Angus M. Cohan, Executive Secretary of the San Francisco Bay Area Rapid Transit

Commission, and the members of his staff for untiring assistance and helpful guidance at all stages of the work. The participation of members of the Advisory Board under the chairmanship of Mr. Alan K. Browne was most constructive and knowledgeable. The members of the firm of Parsons, Brinckerhoff, Hall and Macdonald, under the direction of Mr. Walter S. Douglas and Mr. Rush F. Ziegenfelder, provided voluminous data and many special analyses needed for the financial study; their time was also given generously in meetings and discussions. Upon request of the Commission, the Hon. Edmund G. Brown, Attorney General of the State of California, and Messrs. Ralph W. Scott and Ernest P. Goodman, Deputy Attorneys General, prepared an opinion on a series of basic questions relating to organizing and financing a rapid transit system; this required considerable legal research. The many other respondents to requests for data and interviews are too numerous to mention here, although a partial list is contained in the appendix to this report. The interest they showed in the study and in the progress of transit planning in the Bay Area was gratifying. Their contributions were invaluable. The authors wish to acknowledge the participation of Robert K. Arnold, Alice J. Buckley, Carol Van Alstyne, Dolores J. Winans, Harry R. Woltman, and other members of the staff in the Division of Economics Research of the Institute.

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
PREFACE	iii
I GENERAL SUMMARY	1
The Research Approach	1
Description of System Proposed by the Engineers	1
The Transit Organization	2
Capital Requirements and Bonded Indebtedness	5
Sources of Financial Support	6
Allocation of Financial Responsibility	12
II SUMMARY OF ENGINEERING STUDY AND SETTING FOR THE FINANCIAL STUDY	17
III ORGANIZATIONAL ASPECTS	23
Private or Public Ownership and Control	24
Public Organizations for Ownership or Operation	27
Essential Considerations in a Regional Organization for Bay Area Rapid Transit	30
IV CAPITAL REQUIREMENTS AND INDEBTEDNESS	33
Capital Requirements for First-Stage System	33
Capital Requirements for Subsequent Stages of Construction	43
V SOURCES OF FINANCIAL SUPPORT	47
Fares and Other Transit Revenues	49
Bridge Tolls	50
Taxes on Tangible Property	51
Regional Retail Sales Tax	52
Regional Gasoline Tax	53
Other Sources of Financial Support	54
VI FINANCIAL RESPONSIBILITY AND ITS ALLOCATIONS .	57
General Financial Feasibility of the Transit Project. . .	57
Allocating Financial Responsibility	59
Distribution of Responsibility in Relation to Financing .	64
Regional Distribution of Hypothetical Collections	65
A Hypothetical Transit Zone	65
Combination of Methods of Deriving Public Support . . .	66

Table of Contents (Continued)

<u>Section</u>	<u>Page</u>
VI (Continued)	
County-by-County Distribution of Financial Responsibility.	68
State Aid for Rapid Transit	68
Federal Aid for Rapid Transit	68
VII SALIENT POINTS OF THE REPORT	71
Financial Feasibility.	71
Regional Organization.	71
Combination of Methods of Obtaining Public Support. .	71
Flexibility in Organization Structure and in Financing.	72
<u>Appendix</u>	<u>Page</u>
I Opinion of the Attorney General	73
II Tables	89

FIGURE

<u>Figure</u>	<u>Page</u>
1 Recommended Rapid Transit Construction Stages	3

LIST OF TABLES

<u>Number</u>		<u>Page</u>
1	Estimated Yield of Hypothetical Property Taxes Compared with Actual Levies, Bay Area Counties . . .	8
2	Estimated Yield of Hypothetical Tax on Retail Sales Compared with Actual State Sales Tax, Bay Area Counties	10
3	Estimated Yield of Hypothetical Gasoline Tax, Bay Area Counties	11
4	Estimated Revenue and Operating Expense from Begin- ning of Operation to Year 10--Optimum Plan--First- Stage System	25
5	Estimated Operating Expense--Full Year of Seasoned Operation--Optimum Plan--First-Stage System	26
6	Schedule of Estimated Capital Requirements and Debt Transactions--Optimum Plan--First-Stage System . . .	34
7	Public Bonded Indebtedness Outstanding in Bay Area Counties at Close of Fiscal Year, 1953-1954.	36
8	Operating Data for Rapid Transit Systems in Selected Cities and Metropolitan Areas	37
9	Assessed Value, Estimated Market Value, Total Levies, and Average Tax Rates in Bay Area Counties and in California	39
10	Population Trends Through 1990 for the United States, California, and Bay Area Counties	44
11	Summary of Estimated Capital Costs by Construction Stages	45
12	Revenue Sources of Federal, State, and Local Governments	48

List of Tables (Continued)

<u>Number</u>		<u>Page</u>
13	Estimated Total Capital Requirements and Route Miles, First-Stage System, Six Bay Area Counties . .	60
14	Number of Trips Between and Within Six Counties on an Average Weekday in 1954.	63

LIST OF APPENDIX TABLES

<u>Number</u>		<u>Page</u>
A	Construction Cost Estimate--Optimum Plan--First-Stage System	91
B	Construction Cost Estimate--Minimum Plan--First-Stage System	92
C	Major Features of Authority-Type Rapid Transit Organizations for Metropolitan Areas	93
D	Major Provisions of District-Type Legislation in California Pertaining to Transportation	107
E	Estimated Capital Requirements and Operating Results by Major Segments of First-Stage System--Optimum Plan--Full Year of Seasoned Operation.	118
F	Schedule of Amortization and Interest on Debt--2.5 Percent--5- to 30-Year Serial Bonds--Optimum Plan--First-Stage System.	119
G	Annual Amounts of Public Support Needed for Debt Service on Serial Bonds Under Conditions Assumed for Bay Area Rapid Transit System--Number of Years and Interest Rates as Indicated.	120
H	Annual Payment Required to Retire Debt of \$1 in Specified Number of Years at Varying Interest Rates from 2 Percent to 4 Percent per Year	121

List of Appendix Tables (Continued)

<u>Number</u>		<u>Page</u>
I	Total Local Property Tax Levies in Bay Area Counties for Selected Years 1940-1954	122
J	Passengers Carried by the Transit Industry in the United States, 1929-1954	123
K	Results of Transit Operations in the United States, 1935-1954	124
L	Total and Per Capita Personal Income, Taxable Sales, and Service Station Sales in Bay Area Counties for Recent Years.	125
M	City and County Disbursements (General and Districts) Classified According to Government Functions Per- formed, Bay Area Counties, Fiscal Year Ending June 30, 1954	126
N	Detailed Statement of Expenditures and Receipts for Road and Street Purposes by Source of Funds, Bay Area Counties, Fiscal Year Ending June 30, 1954 . .	127
O	Population in Transit Zone, In Cities, and Outside of Cities, Bay Area Counties, 1955.	128
P	Assessed Value in Transit Zone and Total and Per Capita Assessed Value and Tax Levies in Bay Area Counties	129
Q	Assessed Value of Tangible Property Subject to Local Taxation in Bay Area Counties Inside and Outside Incorporated Municipalities and Total for Selected Years 1940 to 1955	130
R	Sources of Information (Partial List)	131

Section I

GENERAL SUMMARY

The objective of this Stanford Research Institute study is to explore various types of organization and feasible means of financing for a rapid transit program, which has been proposed for the San Francisco Bay Area. The engineering plan is set forth in a study recently completed for the San Francisco Bay Area Rapid Transit Commission by the firm of Parsons, Brinckerhoff, Hall and Macdonald.

The Research Approach

The present investigation is correlated with the engineering study but has been conducted independently for the Commission by Stanford Research Institute. Its purpose is to furnish facts and methods of analysis as a basis for decisions by the Commission regarding the financial and organizational aspects of the system. It is not intended to judge the physical and economic merits of the system recommended by the engineers. Neither does it presume to recommend the adoption of any particular plan, form of organization, or policy. Decisions on these matters rest with the Commission, the governmental bodies concerned with local or regional transportation, and with the general public.

The information upon which the study depends was obtained from the engineering study, transit organizations throughout the United States and in Canada, regional authorities and districts of many kinds, governmental officials at all levels of government, investment bankers, and from independent specialists in transportation, public finance, and public service.

Description of System Proposed by the Engineers

The engineering report recommends adoption of a unified system of regional interurban mass rapid transit, correlated with the street and highway program and other mass transit. The system would provide a grade-separated rail system for electric-powered conventional-type trains capable of average speeds of 45 miles per hour including station stops. Modern comfortable cars would operate on elevated structures of acceptable architecture over most of the 123 miles of routes of the first stage of construction, but would run underground to

subway stations in San Francisco and Oakland. These stations are planned to be within walking distance of most passenger destinations. The Bay crossing would be by underwater transit tube. Service would be as frequent as every 90 seconds during rush hours on the densest routes and no less often than every 15 minutes on most routes during the daytime of weekdays. The accompanying map (Fig. 1) shows the proposed initial and subsequent lines. The first-stage system, as proposed, would cost about 875 million dollars, including cars and interest during construction. The expanded system would bring total capital costs to about 1.89 billion dollars by the year 1990 (based on 1955 costs).

The Transit Organization

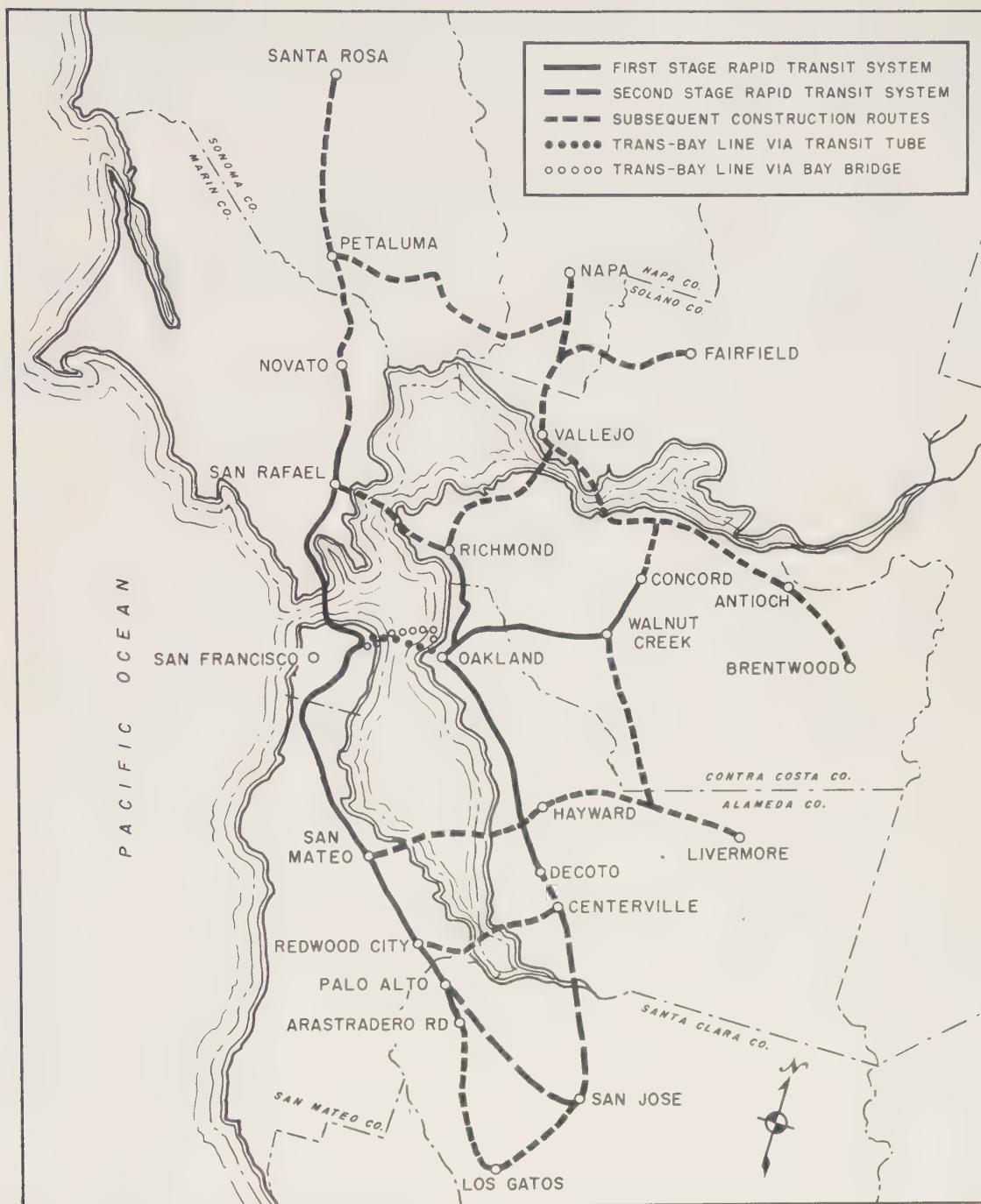
To carry out the purposes of the transit program it is necessary to decide whether to use a private organization or some form of public setup such as a regional authority or district, or the established municipal or county government, or the federal government. The type of organization chosen should depend largely upon the transit policy to be pursued and upon the problem of financing the system.

The law seemingly permits a wide range of organization types for a transit system and considerable flexibility with respect to many structural and policy features. However, since substantial public support is needed, as indicated in the engineering study, private ownership might not be feasible. This would narrow the choice to public agencies.

Regional Transit Authority or District

Some form of regional organization for transit ownership and operation could manage area-wide problems with more dispatch than could separate local units. In the view of the engineers, a unified approach is essential to a regional transit system. This suggests that the choice of organization is further narrowed to regional types.

The area-wide transit program can be carried out either by a regional authority or a regional district. The authority form is noted for relative freedom of action in controlling the transit program, especially with respect to routes, standards of service, rates, and financing. For capital funds it often relies upon revenue bonds which it can issue without voter approval. Members of the governing board of transit authorities are usually appointed by the state governor. The fact that



SOURCE: Parsons, Brinckerhoff, Hall and Macdonald, Engineers, New York

B-1247-1

FIG. 1
RECOMMENDED RAPID TRANSIT CONSTRUCTION STAGES

the authority type of organization is usually beyond the direct reach of local voters gives it administrative freedom; but this has also been a source of criticism. Perhaps the greatest deficiency of an authority form for rapid transit in the Bay Area would be that it could not issue bonds based on the faith and credit of the area, and it would not have the power to raise money by taxation.

A district form of organization would have the two important abilities that the authority lacks: power of taxation and power to sell bonds based upon the general credit of the district. In other respects, the authority and the district could be similarly constituted to accomplish about the same purposes.

Both the authority and the district are creations of the state legislature. The authority usually becomes effective upon the passage of the legislation, whereas the district requires (pursuant to a legislative enabling act) the vote of the citizens in the area to be embraced by the district.

Under a regional type of organization the transit program could benefit from a broad grant of discretionary powers over the physical and financial phases of the transit system. By this means problems could be met with the best solution as the objectives of the program are carried out. Adequate overriding public controls should be provided to safeguard the public interest.

Municipal or County Ownership

Municipal or county ownership of the system would face the difficulties of uneconomic small-scale operation and lack of coordination with an area-wide program, plus the problem of raising large sums of money within local bonding limits and practical taxing methods. From the standpoint of the area-wide system, any lack of success within a single local unit of government might impair the effectiveness of the transit program. However, in any transit organization that is established, the first-hand appreciation of local needs characteristic of local ownership should be preserved.

State or Federal Ownership

State ownership of a regional transit system, according to opinion of the Attorney General, would be legally possible under the state constitution; but the constitutionality of federal entry into the transit

business may not be so easily established. Neither state nor federal ownership is in accord with customary practice. Barring major financial aid for the project from the state or the federal government, regional or local ownership seems to be indicated by the regional and local character of the transit function.

Capital Requirements and Bonded Indebtedness

A fundamental conclusion of the engineering study is that the solution to the Bay Area transit problem requires a standard of service that cannot be covered entirely out of operating revenues. Gross operating revenues in a year of seasoned operation are expected to exceed operating expenses by about 10 million dollars, which would be sufficient to finance the debt incurred for rolling stock (cars) and allow a small reserve for miscellaneous transit purposes. It would not, however, contribute to interest payments or bond retirement, which combined are expected to be about 31 million dollars a year for 30 years beginning with initiation of construction.

Because operating income is not expected to be sufficient to service the construction debts, public support is requisite to a transit system. The amount of this support depends mainly on cost of construction and financing terms, assuming, of course, no operating deficits. Based on the proposed construction program, the necessary debt would reach its maximum of about 700 million dollars in the sixth year after construction begins. This estimate includes interest during construction and debt incurred to purchase rolling stock.

Financing is assumed to be by means of 5- to 30-year serial bonds, bearing an annual average interest cost of 2.5 percent. Public support amounting to about 31 million dollars annually would be supplemented by 8 million dollars a year derived from gross operating revenue and applied to the debt incurred for rolling stock. These combined payments would extinguish the entire debt on the first stage of the system by the end of the thirtieth year.

If the interest rate were taken as 2 percent and the bonds to have maturities of from 5 to 40 years, the yearly public support could be reduced to about 22 million dollars; this would result in a total saving in financing cost of about 50 million dollars as compared with the first set of financing assumptions. The interest should be as low on bonds of a transit district with taxing power as is attainable by any class of borrowers.

Subsequent extensions of the system would likely be made at a more gradual pace than the initial construction. This would permit the reduction of the debt on the first stage to a point where debt additions for later system extensions would not bring total debt outstanding above the high point reached in the first stage. Growth of the area, making extensions desirable, should bring additional sources of public support. The per capita burden may actually decline since population is expected to more than double by about 1990. At no time is it expected that the total debt outstanding for the transit system would exceed the amount of total public debt of over 700 million dollars now outstanding in the Bay Area. However, excluding rolling stock, the annual debt service of the nine counties of the Bay Area would be about 10 dollars per capita in the first financing example given above and about 7 dollars in the second. These amounts represent the full measure of public support needed each year for the first-stage system.

Sources of Financial Support

The sources of money to pay for the transit system, and to which a reasonable though varying degree of feasibility attaches, will probably be confined to passenger fares, bridge tolls, property taxes, retail sales taxes, gasoline taxes, and possibly federal or state aid. In exploring sources of revenue and public support, attention is given to accepted criteria such as size and dependability of revenue yielded; benefits conferred by the transit system in relation to its burdens; charges, assessments, or levies in relation to ability to pay; absence of subsidy effect in a field where private enterprise might succeed; effect upon traffic and transit utilization for the general welfare; and general feasibility in relation to the problem at hand.

Fares

Financing by fare revenues, if they were ample, would be almost ideal. This source should be used to the fullest extent possible, therefore, short of discouraging patronage to the point of aggravating the highway traffic problem. Using this standard the engineers have estimated that transit operating revenues would produce about 29 million dollars a year under conditions of seasoned operation of the first-stage system. This is a little less than one-half the total requirements for combined operating and financing costs. Because of the magnitude of public support required to meet this situation, all sources of revenue are viewed as possibilities, at least for purposes of exploration, analysis, and comparison.

Bridge Tolls

Tolls collected on the San Francisco-Oakland bridge if applied to rapid transit purposes instead of to other highway crossings of the Bay could provide about 9 million dollars a year. In justification of this, the engineering report concluded that a transit tube under the Bay would release two traffic lanes on the bridge for highway use and would further relieve highway congestion by offering transit service of the type which would encourage commuters to use mass transit. Higher bridge tolls for peak hours would tend to divert traffic to the transit system and would make it possible to charge transit fares more nearly approaching total cost. However, application of bridge tolls to rapid transit would require some federal legislation to remove a technical limitation on the use of toll revenue. It would also, according to the engineering study, modify the need for a southern crossing of the Bay.

Property Taxes

Regional property taxes would be necessary to give security to regional bonds. A general property tax is used in many large cities to cover capital costs and deficits of transit operations. Such a tax is justified because the community cannot function without a transit system, and property values and opportunities to earn a living are enhanced by the expenditure. The objections to a tax for this purpose are that the property tax is difficult to administer fairly and is already overburdened to support other imperative governmental functions. However, if all property in the Bay Area were taxed uniformly at about 67 cents per 100 dollars of assessed value, the yield would be about 31 million dollars a year, or enough to provide all public support needed by the transit system (Table 1). Such a large average increase in one year has not often been experienced in this area. However, in the fiscal year 1954-55 total levies in the Bay Area increased about 47 million dollars over those of 1953-54; but this was due in large part to increases in assessed values.

Because of the conditions surrounding the property tax and because property owners are neither the sole beneficiaries of the transit system nor necessarily better able to pay taxes than others, a good case is made for distributing an appreciable part of the transit burden elsewhere than on property. A differential tax on property within a certain range of the transit system--for example, within four miles--might be more equitable than a uniform rate throughout the area. The effect of this type of zoning is mentioned below.

Table 1

ESTIMATED YIELD OF HYPOTHETICAL PROPERTY TAXES COMPARED WITH ACTUAL LEVIES, BAY AREA COUNTIES
(Thousands of Dollars)

County	Assessed Values ^{1/}	Actual Total Tax Levies ^{1/}	Estimated Yield from Taxes at Various Rates			Assessed Value in 4-Mile Transit Zone ^{2/}	Estimated Yield from Tax of \$.20/\$100 in 4-Mile Transit Zone
			\$.05/\$100 9 Counties	\$.673/\$100 9 Counties	\$.732/\$100 6 Counties		
Alameda	\$1,079,618	\$ 68,866	\$ 539	\$ 7,266	\$ 7,903	\$ 951,909	\$1,904
Contra Costa	613,192	34,963	306	4,127	4,489	231,033	462
Marin	135,469	8,393	68	912	992	104,240	208
Napa	58,065	3,143	29	391			
San Francisco	1,264,198	83,532	631	8,508	9,254	1,264,198	2,528
San Mateo	519,741	30,692	259	3,498	3,805	497,304	995
Santa Clara	623,922	33,744	311	4,199	4,567	119,455	239
Solano	124,867	5,811	62	840			
Sonoma	187,276	9,949	94	1,260			
Total, 9 Counties	\$4,606,348	\$279,093	\$2,299	\$31,001			
Total, 6 Counties ^{3/}	\$4,236,140	\$260,190			\$31,010	\$3,168,139	\$6,336

1/ California State Board of Equalization. Actual levies are for year 1954-1955.

2/ Estimated by Stanford Research Institute. This estimate includes only incorporated cities; inclusion of all property within 4 miles of the transit lines would probably add 5 to 10 percent in the zone. Assessed values for 1955-1956 were obtained by changing 1954-1955 data for each city by percentage of change experienced by county in which city is located.

3/ Alameda, Contra Costa, Marin, San Francisco, San Mateo, and Santa Clara.

Regional Retail Sales Tax

A regional retail sales tax to be collected on behalf of the transit organization could yield large sums with little additional administrative effort. For example, a tax of less than one percent of present taxable retail sales in the region would cover the full amount of support needed for the transit system (Table 2). If other taxes were also used, or if bridge tolls could be used, the sales tax could be 0.5 percent or less, even if the counties not initially served were omitted from all taxes. The sales tax has been regarded by many authorities on public finance as pressing relatively hard on those less able to pay, but in combination with other taxes and with exemption of food it need not be ruled out on that ground. Of all taxes now in use in California the impact of the sales tax is the most general and the most diffused.

Gasoline Tax

The gasoline tax is committed strictly to highway use under an amendment to the constitution of the State of California. Otherwise, a special tax on gasoline of one-half cent per gallon on estimated sales in the Bay Area could produce about 5 to 6 million dollars annually in support of the transit system or to assist in the purchase of joint rights-of-way for highways and transit lines (Table 3). To produce the entire public support needed for the transit system would require a tax of about three cents per gallon on the same base.

It has been argued that the gasoline tax in California fails by a wide margin to provide enough funds for the critical highway needs. But it should be noted that the highway program is supported by current revenues and without borrowed funds. There has been much debate on the question of whether the present or future generations should pay for the highways, and whether the practice of irrevocably earmarking a source of public revenue for a specific purpose is good public finance. Since these questions are not resolved and since an increase in the federal tax on gasoline is in prospect, the transit organization may not find the gasoline tax one of the most likely sources of support.

Other Sources of Revenue

The only other feasible sources of revenue of worthwhile yield might be income taxes, gross receipts taxes, or payroll taxes. Since these would be expensive to administer on a regional basis, and more especially because they seem better committed to the governmental

Table 2

ESTIMATED YIELD OF HYPOTHETICAL TAX ON RETAIL SALES
 COMPARED WITH ACTUAL STATE SALES TAX, BAY AREA COUNTIES
 (Thousands of Dollars)

County	Taxable Retail Sales 1954-1955 ^{1/}	Actual State Sales Tax 3.0%	Estimated Yield From Retail Sales Tax of	
			0.5%	0.8%
Alameda	\$1,136,056	\$ 34,082	\$ 5,680	\$ 9,088
Contra Costa	268,816	8,064	1,344	2,151
Marin	93,681	2,810	468	749
Napa	53,209	1,596	266	426
San Francisco	1,539,362	46,181	7,697	12,315
San Mateo	338,837	10,165	1,694	2,711
Santa Clara	472,258	14,168	2,361	3,778
Solano	99,765	2,993	499	798
Sonoma	135,186	4,056	676	1,081
Total, 9 Counties	\$4,137,170	\$124,115	\$20,685	\$33,097
Total, 6 Counties ^{2/}	\$3,849,010	\$115,470	\$19,244	\$30,792

^{1/} State Board of Equalization.

^{2/} Alameda, Contra Costa, Marin, San Francisco, San Mateo, and Santa Clara.

Table 3

ESTIMATED YIELD OF HYPOTHETICAL GASOLINE TAX, BAY AREA COUNTIES
(Thousands)

County	Motor Vehicle Registration ^{1/}	Estimated Gallons ^{2/}	Estimated Amount Yielded at Various Rates			
			6.0¢/gal 9 Counties	0.5¢/gal 9 Counties	2.8¢/gal 9 Counties	3.0¢/gal 6 Counties
Alameda	381,720	305,376	\$18,323	\$1,527	\$ 8,551	\$ 9,161
Contra Costa	163,100	130,480	7,829	652	3,653	3,914
Marin	51,702	41,362	2,482	207	1,158	1,241
Napa	26,535	21,228	1,274	106	594	
San Francisco	308,662	246,930	14,816	1,235	6,914	7,408
San Mateo	161,601	129,281	7,757	646	3,620	3,878
Santa Clara	212,480	169,984	10,199	850	4,760	5,100
Solano	54,779	43,823	2,629	219	1,227	
Sonoma	70,624	56,499	3,390	282	1,582	
Total, 9 Counties	1,431,203	1,144,963	\$68,699	\$5,724	\$32,059	
Total, 6 Counties ^{3/}	1,279,265	1,023,413	\$61,406	\$5,117		\$30,702

^{1/} State Board of Equalization.

^{2/} Estimated by Stanford Research Institute at 800 gallons per registered motor vehicle per year.

^{3/} Alameda, Contra Costa, Marin, San Francisco, San Mateo, and Santa Clara.

agencies by which they are now used, they are not regarded as appropriate for rapid transit support except as a last resort. State and federal aid are discussed below.

Allocation of Financial Responsibility

The distribution of the financial support of the transit system is determined in part by the means of raising the funds. By paying fares, passengers will carry the largest portion of the costs borne by any class of the population in the area, unless all public support is raised from a single source such as a property tax or sales tax. Passengers would also pay their share of any general taxes collected for rapid transit.

In determining what property or what people should be taxed for public support, the transit organization and its legal architects will be confronted by the same factors as those governing the choice of revenue sources summarized and, in addition, the problem of defining the territory from which the collections are to be made.

Area-wide or Transit-Zone Support

The entire area to be served by the ultimate integrated system as now planned has an appropriate interest in the costs of planning the complete system and constructing the first stage, which will include provisions for future extensions. If costs of this nature are recognized together with the general economic benefits to the whole area in the nine counties, there is a good case for a general tax throughout the area--at least a moderate one.

There is valid argument, on the other hand, for a higher charge upon the residents and property owners in the zone close to the transit system. Adjustment to this line of reasoning might be approached roughly by omitting the counties not directly served by the first-stage system when allocating the bulk of the charges for support of the system. Refinements of this approach would seem possible within practical means through zoning. If a property tax is to be distributed, it might be, for example, 5 cents per 100 dollars of assessed valuation throughout the nine-county area and an additional 20 cents on property within four miles of the transit lines (including that inside incorporated cities any part of whose boundaries are within four miles). It is estimated that the 5-cent tax so collected would yield about 2.3 million dollars a year, while the 20-cent tax would produce about 6.3 million dollars a year (Table 1).

A refined zoning for sales or gasoline taxes would be less practical, and less necessary on grounds of equity, than for property taxes. However, it would seem feasible and not unfair to restrict sales or gasoline taxes to the six counties served in the first-stage plan, especially if some general support, as through a property tax, were already being given by the other three counties which are parties to the Bay Area transit planning activities.

The estimated county-by-county effects of distributing the hypothetical charges at various rates are summarized in Tables 1, 2, and 3. Present collections in the same zones or areas are also shown (actual collections where known, estimates elsewhere).

State and Federal Aid for Rapid Transit

Assistance from outside the Bay Area would ultimately need to come from the same type of revenue-producing measures as those that have been considered for the regional organization, with the exception, in the case of the federal government, of duties and currency inflation. Federal or state grants-in-aid to match certain local expenditures could have a stimulating effect. They would have the same fundamental justification as federal and state aid on various types of highways, roads, and streets. However, street and highway aid--especially state aid--is provided largely out of "user" taxes such as gasoline taxes and motor vehicle licenses, fees, taxes, and fines, and could be regarded as an apportionment of funds to the areas which largely provided them. The more general interest of the state in the transit system should be recognized because of economic benefits the system indirectly confers on the state outside the Bay Area. Even so, the state would not seem warranted in making financial draughts on other parts of the state when none of them seem better situated financially than the Bay Area. Aside from the income tax, the sources of revenue that are available to the state are no better than those which might be feasible for the transit organization.

The federal government's responsibility for rapid transit in the Bay Area seems even more remote than the state's. However, the federal government has a special interest in good local transportation from the standpoint of national security, especially in time of war when the civilian use of gasoline, automobiles, and rubber may be strictly curtailed. Furthermore, in the Bay Area there are many important military establishments which need the service of rapid transit for workers and military personnel. Since the same can be said of numerous other metropolitan areas, any participation of the

federal government in the Bay Area program would seem to commit it to many other large undertakings. However, it is an easy logical step from federal aid for urban freeways to the granting of easements for transit lines in conjunction with highway rights-of-way, and from there, to direct aid in construction of transit facilities. This last step might be regarded as an economical method of reducing the pressing need for freeways.

No estimates have been attempted for the amount of outside aid which might be obtained, since it appears that local resources should be sufficient for the transit system as proposed. Although there are no precedents for state or federal aid to transit systems beyond funds for studies, no strong reasons against such government aid have appeared to show why it would not be appropriate and welcome. But the initiation of the transit system need not wait on outside aid except for administrative, legislative, or political reasons. Furthermore, state and federal aid are almost never committed on a long-range basis and could therefore not be counted on as security for bonds. Perhaps any assistance from sources truly outside the transit region's would be on a one-time or irregular basis.

A Combination of Sources of Support

Fund raising could be administered most easily if all public support were obtained from a single source such as a uniform ad valorem property tax or a sales tax, applied throughout the transit region. However, a combination of methods would seem to be more feasible, more equitable, and more likely to produce desirable economic and social results than reliance on a single source of support. If collections from a combination of methods exceed needs, the excess could be apportioned to cities or counties for appropriate purposes, such as local transit, feeder lines, parking facilities, or more general functions. This would obviate numerous changes in rates and would ease the problem of zoning.

* * * * *

In summary, there is merit in empowering the transit organization, if legally feasible, to work out through its board an optimum organization and combination of means for obtaining public support. It is assumed that the board of the transit organization should make the final decisions as to the kind of transit system to be adopted, its routes, service, and major policies, even though the engineering study

recently completed makes certain recommendations along these lines. Such recommendations are not intended to be binding, even if the system could be brought into being before conditions change or before it may seem necessary to alter some of the basic assumptions of the engineering report. Therefore, the approach to organization and financing should leave the board in a flexible position to adapt the transit organization and the fund-raising program to the system actually selected and to the fiscal circumstances of the Bay Area when the program is carried out.

Section II

SUMMARY OF ENGINEERING STUDY AND SETTING FOR THE FINANCIAL STUDY

The starting point in this study is the conclusion reached by the engineering firm that a mass rapid transit system providing inter-urban service between major centers in the San Francisco Bay Area is physically feasible and economically justified. Likewise, the economic justification, even in terms of general financial feasibility, is considered beyond question by the engineering firm of Parsons, Brinckerhoff, Hall and Macdonald as expressed in their report to the San Francisco Bay Area Rapid Transit Commission dated January 5, 1956.

Admittedly, financing an undertaking of the magnitude of an area-wide transit system, requiring capital expenditures for the first stage of about 875 million dollars and of a similar amount for subsequent stages before 1990, would tax the understanding and ingenuity of the leaders and citizens of the Bay Area. But according to the engineers, the alternatives to adequate rapid transit would be far more costly even though some of the costs might not be so clearly observable as those of a modern transit system.

The conclusions of the engineers are stated briefly in the letter of transmittal accompanying their final report, from which the following statement is taken:

In concluding two years of work here, we are firmly convinced that the answer to ever-increasing traffic congestion in the Bay Area lies in the utilization of high speed, grade-separated, interurban rapid transit as a complementary component to the regional highway network. We trust we have established beyond doubt the feasibility of our proposals and that you will find in this report the elements essential to your final decision.

Because of the far-reaching financial effects of constructing and operating the proposed system, it seems appropriate to note that the engineers do not advocate rapid transit to the exclusion of any other means of transportation, and by implication, not to the exclusion of any other private or public function. In their report they state further that:

Implicit in the generalized plan of interurban rapid transit routes illustrated. . . is the proposal that each major mode of transportation--the automobile, local transit, interurban transit--be provided to the extent that each is most appropriate economically. Thus interurban transit is planned to link commercial activity centers and subcenters to each other and to their tributary residential areas. Hub of the plan is the trans-Bay tie joining San Francisco and Oakland. From this unified regional core, first stage routes extend into Marin County, north and south along the East Bay shore, into residential Contra Costa County, and down the Peninsula.

The engineering plan provides for construction in stages, but not in piecemeal fashion. The first stage is considered as an economic unit and would include the facilities as outlined in the foregoing paragraph with lines extending from St. Vincent's in Marin County to Arastradero Road south of Palo Alto, from Richmond to Decoto south of Hayward, and eastward from Oakland to Concord (Fig. 1).

The projected second stage of construction would take in a loop through San Jose from Palo Alto to Decoto and an extension northward to Novato in Marin County. This stage would be completed about 10 years after the first stage and would entail additional capital costs of about 135 million dollars, including interest during construction. Subsequent additions to the system to follow within 20 years of the second stage would extend the lines to Santa Rosa, Fairfield, Brentwood, and Livermore at the extremities and would make connections from Petaluma through Napa and Vallejo to Concord, from San Rafael to Richmond, from San Mateo through Hayward, Dublin, and Pleasanton to Livermore, from Redwood City to Niles, and from Palo Alto through Los Altos and Los Gatos to San Jose. These additions subsequent to the second stage would add an estimated 875 million dollars to capital costs, including interest during construction. The full system as contemplated for about 1990 would cost about 1,885 million dollars, including interest during construction, at today's prices. All of the foregoing estimates, as applied to the first stage, are based upon elevated structures for a major part of the routes, an underwater Bay crossing from San Francisco to Oakland, and underground terminals in those two cities. In subsequent stages, relatively more use may be made of surface lines.

In the present analysis, little attention will be given to a so-called minimum plan, on grounds that it is not considered satisfactory by the engineers. It differs from the optimum plan essentially in the use of the present San Francisco-Oakland bridge crossing instead of underwater transit tubes and in the use of stations built above ground. The minimum plan has the disadvantages of inferior travel time, poor passenger distribution at central terminals, and poorer financial results from operations. In addition, the minimum plan contemplates the use of space on the bridge which could otherwise be converted for highway use. It not only would require the use of elevated structures in downtown San Francisco and Oakland, instead of underground, but much of the construction would have to be dismantled at great cost and inconvenience at a date not far into the future when it is planned that the system would be extended. In view of these disadvantages, the problem of financing the additional 145 million dollars entailed in the optimum plan seems the lesser evil. For a detailed comparison of costs relating to the optimum and minimum plans, see Tables A and B.

The engineering study devotes considerable attention to a suspended system--usually referred to as a monorail. However, no special treatment is given to it in the financial study since its cost and performance characteristics are not sufficiently different from those of the more conventional system (using supported trains) to have a significant bearing on the financing problem. Furthermore, this alternative type of facility has never been tested in service such as planned for the Bay Area; and it has been rated as more costly and less flexible than supported trains in performing similar services, according to the engineering estimates. Until at least one monorail system has proved itself in service under American conditions, it is reasonable to expect some resistance to any financial plan which might have to rest upon the promise of the untried facility.

The proposed system is fashioned with high standards of safety, comfort, speed, frequency of schedules, convenience of access to passengers, better distribution at the points of origin and destination, and ample parking and station facilities. Its fares as recommended in the engineering study are to be comparable with existing commutation rates, generally below noncommutation rates, and competitive with minimum out-of-pocket costs of operating private automobiles for competing trips.

The optimum plan would make possible during the rush hour a travel time from Berkeley to San Francisco, for example, of about 20 minutes at a fare of 40 cents. This compares with 55 minutes and 30 cents for the fastest means of transportation now available. The present fare does not include transfer privileges at the San Francisco terminal,

whereas the proposed system would have several stations in San Francisco so located as to deliver the majority of riders within a short walk of their destinations, thus avoiding transfers for most riders. From Palo Alto to San Francisco the transit time and fare would be comparable with those existing on the Southern Pacific Lines today. However, better distribution in San Francisco would save most commuters 15 or 20 minutes on each one-way trip. On the new system, riders from Hayward with comparable costs would get to San Francisco in about 30 minutes as compared with about 65 to 75 minutes today. The average running speed over the entire system would be about 45 miles per hour including station stops.

The frequency of service would be stepped up substantially with the proposed system. It is planned that the heaviest-travelled routes would have headways of from 1-1/2 to 6 minutes in rush hours, and nearly all routes would have trains every 15 minutes during other daytime hours on week days. Since the recommended fares would be lowered for off-peak passengers, the saving over many present non-commutation rates would be substantial.

However, the proposed rate schedules imply a large measure of public support in the financing of capital expenditures. The engineering study concludes that such an arrangement would promote the greatest community benefit from the rapid transit system through making the service available to the most people on the best economic terms possible and through the concomitant relief to congestion on the highways in and about urban centers.

In relating costs to expected benefits, the engineering report claims that the proposed system will postpone the need for additional Bay crossings for automobile traffic costing hundreds of millions of dollars, preserve and enhance the general economic health and growth of the area, and contribute to a desirable way of life. The summary of the engineering study concludes with the following statement:

But in the broader sense this is the price of a dominating aspect of the Bay Area's standard of living. It is the cost, in terms of transportation, of fulfilling the accelerating demand for single-family houses in dispersed suburban areas and of preserving and enhancing at the same time the urban concentrations of employment and commerce, where the means to earn that standard of living must largely focus. It is as the least-cost solution to the transportation requirements of such a regional organization of living

and working areas that we recommend a program of interurban rapid transit to supplement and complement the regional highways.

The essence of the story is that without rapid transit the region will ultimately pay many times its cost in additional hours of travel time, in the additional cost of trucking goods over highways congested by automobiles, in diminished revenues from property depreciated by congestion or swallowed by automobile facilities, and in the premium costs of urban freeways and parking garages. We do not doubt that the Bay Area citizens can afford rapid transit; we question seriously whether they can afford not to have it.

Given the engineers' assumption that costs are not disproportionate to expected benefits in the general sense, it is the task of the present study to make the preliminary tests of the feasible means of financing the project as proposed and to compare alternative types of organization for carrying out the purposes of the transit program. The type of organization, although it affects the success of the project, is of secondary importance to financial considerations; they will not only govern the basic kind of organization to be adopted but whether or not the project becomes a reality. Where one venture succeeds while another of greater economic and social merit fails to get under way or to survive, the difference is often found in the relative ease or difficulty of financing. This is particularly so in the field of public service or government, where money must be provided through taxation or subsidy and where one public purpose must be weighed with many others dependent upon common sources of revenues.

Aside from the sheer magnitude of the undertaking, perhaps the most challenging financial aspect of the transit system is the need to rely upon public support for the bulk of the capital costs. Expressed another way, the riders are expected to pay fares which will be used up to cover operating costs and provide a modest surplus above the costs and debt service of the rolling stock, which surplus should be essentially free for transit needs other than debt payment. However, annual payments on principal and interest on indebtedness incurred to finance construction are estimated to require an additional amount roughly equal to fare revenues during a year of seasoned operation (depending upon terms of financing) or about 28 to 35 million dollars. It is to this situation containing questions of public finance that this study is primarily addressed. The related problems of allocating financial responsibility and tax burdens are of greatest concern.

Since the analysis contained in the following parts of this report is based on the assumptions made by the engineers affecting estimates of cost and financing, they are set forth in summary form:

1. The rapid transit system will be built as planned and efficiently operated.
2. The system will be integrated with other transit facilities and no competing transit facilities will be constructed.
3. The transit organization will be the sole authority on rates and it will be tax exempt.
4. Future highway and parking facility expenditures in the area will receive advance review to insure that they are complementary to the transit system.
5. The same general trends of economic activity and business conditions experienced in the Bay Area during the past five years will continue.
6. A vigorous campaign of public education on the use of the transit system designed to stimulate patronage will be carried on in advance of commencement of service and will be continued by the operating organization.

Section III

ORGANIZATIONAL ASPECTS

Approach to Organizational Analysis

The type of organization structure appropriate to the purposes of the Bay Area rapid transit system as planned in the engineering study will be governed by three primary influences: (1) the general objectives of the transit program, (2) the problem of financing the system, and (3) legal and legislative problems and possibilities. The third one is presumably to be covered by additional studies or through the use of legal counsel to the San Francisco Bay Area Rapid Transit Commission and therefore will not be dealt with here. In passing it may be observed, however, that the opinion rendered by the Attorney General of the State of California on certain questions relating to organization and financing for a rapid transit system (Appendix I) indicates that the legal and legislative framework of the state and its subdivisions need not be regarded as a barrier to effective organization of the transit system.

Among the alternatives reviewed here are private ownership and operation of the transit system on the one hand and public ownership on the other hand, including alternative kinds of governmental units, whether county or local, regional, state or federal.

The general objectives of the transit program are covered in the engineering study and they derive from the purpose for which the Commission was set up, namely, to develop "... a master, coordinated rapid transit plan. . ."^{1/} As viewed by the engineers this means that the rapid transit system should be integrated throughout the service area. According to the master plan as evolved in the engineering study, the areas of highway congestion in and about the major urban centers must be relieved by a transit system offering the necessary inducements of service and economy to get rush-hour commuters to use the train instead of their private automobiles. This is regarded as the key to good local transportation of all types in the urban areas.

^{1/} State of California, Senate Bill No. 549, Chapter 1760, Section 1 (d), July 25, 1951.

Integration and attractive service have important implications both for organizing and for financing the proposed system. These factors are appropriately discussed in the engineering report and fall essentially outside the subject matter for present analysis; however, the purposes as proposed by the engineers are treated as assumptions in the comparison of organization types and financing methods.

Private or Public Ownership and Control

Private ownership of transit facilities is widely considered to be more efficient and more likely to be attuned to economic need than is public ownership. Be that as it may, private ownership of the proposed Bay Area system in its entirety seems well-nigh impossible in the foreseeable future. There may be a conflict of purpose if private control is used. The transit system is designed to relieve overcrowded street and highway traffic by attracting patronage at fares which do not meet total costs, including financing. Fares could not meet all costs without defeating the objective of alleviating congested traffic.

Furthermore, if it is desirable to achieve full utilization of the facility, which in any event will require public support, the fares will not likely be set at the level where they would produce the greatest gross or net revenue. A rate policy which aims at the highest transit patronage may not fit in well with private ownership or operation. However, in the unlikely event that revenues should exceed all costs at some future date, serious consideration should be given to selling the system to private owners at a price which is fair to all concerned. As will be seen in the discussion of sources of capital in Section V, private ownership, if possible, would fulfill most of the ideals of equity in financing.

The engineering estimates show a need for public support which is about equal in magnitude to the expected revenues of the system. Since the revenues would exceed operating expenses by only about 8 to 12 million dollars a year, the operating income would not go far beyond financing the rolling stock (Tables 4 and 5). This would leave the major burden of financing construction upon the public, which suggests public ownership. Private interests might furnish the capital for the rolling stock which could be leased to the transit system. Also, some other facilities could be owned privately and leased to the transit organization. But this would likely increase current costs. To subsidize private owners would defeat much of the incentive of private enterprise.

Table 4

ESTIMATED REVENUE AND OPERATING EXPENSE FROM BEGINNING
OF OPERATION TO YEAR 10--OPTIMUM PLAN--FIRST-STAGE SYSTEM
(Thousands of Miles and Dollars)

Year from Beginning of Construction	Optimum Plan						Minimum Plan
	Passenger Miles	Fares	Other Revenue	Total	Operating Expense	Net Revenue	Net Revenue
1	864,350	\$21,022	\$210	\$21,232	\$15,647	\$ 5,585	\$ 4,658
2	1,022,596	24,867	249	25,116	17,818	7,298	6,215
3	1,135,375	27,611	276	27,887	19,035	8,852	7,667
4	1,214,485	29,542	295	29,837	19,545	10,292	9,037
5	1,271,620	30,933	309	31,242	20,465	10,777	9,467
6	1,313,812	31,955	319	32,274	21,143	11,131	9,779
7	1,342,819	32,654	327	32,981	21,605	11,376	9,993
8	1,371,826	33,353	333	33,686	22,068	11,618	10,208
9	1,400,833	34,053	340	34,393	22,535	11,858	10,421
10	1,429,840	34,752	348	35,100	22,994	12,106	10,635

Source: Parsons, Brinckerhoff, Hall and Macdonald--Engineers--New York.

Table 5

ESTIMATED OPERATING EXPENSE--FULL YEAR OF SEASONED OPERATION
OPTIMUM PLAN--FIRST-STAGE SYSTEM

Item	Operating Expense (\$000's)	Expense per Car Mile
Maintenance of Way and Structures	\$ 2,879	\$0.0791
Maintenance of Rolling Stock	3,562	0.0979
Operation of Service	6,460	0.1776
Power	3,671	0.1009
General and Administration	2,254	0.0619
Total	\$18,826	\$0.5174

Source: Parsons, Brinckerhoff, Hall and Macdonald--Engineers--
New York.

However, some of the incentives often associated with private ownership and operation might be attained if the Bay Area system is so organized that the general manager is required to balance the operating budget without subsidy. This feat seems achievable under the assumptions worked out by the engineers. An alternative would be to make a contract with private interests, who might either lease the facilities or operate them under a management agreement.

Any scheme of private ownership for the proposed system, either as a whole or in part, is likely to have much higher financial and taxation expenses than public ownership, so long as a large financial deficit must be borne. This point is analyzed further in Section IV which discusses capital problems.

Public Organizations for Ownership or Operation

A regional transit organization embracing the nine counties of the Bay Area (or perhaps the six counties served directly by the first-stage system) seems to offer important advantages over transit ownership scattered among several independent governmental units or private owners. From a physical and economic standpoint, the unified transit system which could be most readily developed by a strong regional organization seems superior to a conglomerate system. In the situation faced by the Bay Area, the strongest and perhaps controlling factor in the choice of organization is the superior financial capacity of a regional organization.

Regional Transit Authorities and Districts

The two usual types of regional organization having jurisdiction over rapid transit functions are the authority and the district. A transit authority, in the sense employed in this analysis, is usually a public body created by the state legislature to exercise rather broad administrative and financial powers to provide adequate transit service. Since the major provisions of a number of active and proposed authorities are compared in considerable detail in Table C, only the characteristics of most significance to the control of the transit system and its financing will be mentioned here. The transit authority is usually governed by a small board whose members are appointed by the governor of the state or states in which the authority functions. More often than not, the authority has jurisdiction over transit rates and service, and it always has the power to plan, construct, buy, lease, and sell, and to operate transit facilities, usually of all types. One of its most

distinctive features is its power to borrow money and issue bonds without the vote of the public. However, bonds of the authority are usually not secured except by the revenues of the transit system; the bonds are therefore usually called "revenue bonds." Another distinctive feature of the authority is the absence of taxing power in most instances.

This sketch of the distinguishing traits of a transit authority should reveal certain of its shortcomings for the proposed Bay Area rapid transit system. Without the power to tax it is without the power to issue general obligation bonds. This would seem to rule out the authority, as rather strictly defined, as an appropriate type of organization for the proposed system. However, if the authority concept were to be applied purely to the rapid transit functions which are separate and apart from raising capital funds for construction, the authority form might do very well as it does in the Boston metropolitan area. The deficits of the Boston transit system are certified to the Commonwealth of Massachusetts by the Metropolitan Transit Authority and are then added to the tax rolls. Boston is one of several instances where the authority form is adopted partly to achieve independence from the slow and involved processes of a medley of general governmental units. One source of criticism of authorities in general has been their tendency toward undue independence, unchecked by sufficient overriding public control.

A transit district, like the authority, usually is created by the state legislature. Often it comes into being through an enabling act which must be followed by an affirmative majority of voters in the district; sometimes the voting is according to formula which allows local option to a high degree. The most distinctive feature of the district form of organization often is its power to levy taxes on property or on other bases usually specified in the enabling act. There is considerable latitude in the manner by which the powers and duties of the governing board or of the organization may be prescribed by statute. However, because it has the power to tax, the district may be more circumscribed than the authority.

The district form usually relies more on local government for appointments and has more elective offices than does the authority. In many cases the district resembles a federation of local governmental or county units, and as such tends to be more closely attuned to the electorate than does the authority. Table D presents a detailed comparison of major features of district-type legislation in California pertaining to transportation.

From the standpoint of the proposed rapid transit system in the Bay Area, a district might operate under one inherent handicap: in

most cases it cannot issue bonds on the faith and credit of the district for major capital expenditures without a majority vote of the voting residents of the district. Customarily a majority of two-thirds of the votes cast is required to approve bond issues.

Metropolitan Government

Either the transit authority or the district is but a partial step in the direction of metropolitan government. In the Toronto area several municipal functions, including rapid transit and streets and highways, have been transferred to a metropolitan government. Other areas are making plans in greater or lesser degree to follow suit. Meanwhile, most metropolitan communities will make use of special districts or authorities for transportation or for the even more restricted separate functions of rapid transit, bridges, or streets and highways.

On logical economic grounds there is much to commend a metropolitan organization which has the powers and responsibility for coordinating several governmental and service functions of an area-wide character. The solution to the whole problem of urban transportation cannot be solved by the improvement of a single facility in a single area without regard to the others. In a still broader sense, the financial requirements of each governmental function affecting a whole area call for an area-wide approach and coordination. At the same time, the established organizations of local government possess first-hand knowledge and competence where local functions are concerned which should not be overridden by a "super" government.

County, State, or Federal Ownership or Operation

Assumption of financial or operating responsibility for rapid transit on a county-by-county basis faces formidable disadvantages in the fact that a Bay Area interurban transit system cannot exist unless it is unified: a small-scale operation is economically prohibitive. It seems unlikely that an area-wide approach could prevail over local considerations without a unifying organization possessed with definite powers over both physical and financial phases of the transit system. In some instances a transit system would encounter difficulties in bond financing and in raising funds by taxation because of legal limitations if responsibility were confined to the county. Furthermore, the credit standing of a single county would usually be inferior to that of a combined group of counties.

State or federal operation of rapid transit would represent a radical departure from tradition in the United States, even though technically a district or authority may be regarded as a state organization. Some functions and responsibilities of the state are affected by rapid transit, particularly in connection with highways and fiscal administration, but the regional and local interests are dominant. Unless state financing is to predominate, regional ownership and operation seems more appropriate and far less cumbersome. Federal ownership has not been seriously considered because of the local nature of the transit problem. However, what has been said here need not rule out federal or state aid for rapid transit. This subject is explored in Section VI.

Essential Considerations in a Regional Organization for Bay Area Rapid Transit

On the basis of the experience of other transit organizations and in view of the special financial needs of the proposed Bay Area rapid transit system, certain desirable characteristics of a regional organization seem to emerge. Many of these can be created by either an authority or a district.

The foremost requirements are a unified power of administration throughout the transit district and the power to issue bonds based on the authority to levy taxes. The power to tax may need to go beyond the property tax, as will be discussed in Section V.

Of high importance to an effective transit organization is broad discretion, within limits of fairness to competing facilities, to determine the major policies of the transit system, such as those that pertain to routes, service, types of facilities, and fares. This discretionary authority should be tempered with procedures for determining public preferences and paying them due regard, as through advisory boards or through membership on the transit board of representatives from constituent communities, through appointment by local governmental bodies, or by direct election.

For administrative effectiveness, the governing board should not be so large as to be unwieldy. Its members might be paid modest salaries or given fees to insure their availability on call to transact business of the transit organization. Whether the chairman receives a full salary would depend upon the extent to which he actually engages in the management of the enterprise. In any case, a well-paid general manager, whatever his formal title, should have entire administrative responsibility

and accountability. In practice his functions usually are separate from those of the board, which determines broad policy.

The regional organization of necessity must be made up of contiguous areas. If the first-stage system is to be established, the region should include at least the six counties, or those parts of the counties, to be served directly by the transit lines. A good case can be made as discussed in Section VI, for including at the start the nine counties which ultimately are to be served if the engineering plan is carried out in full. The extent of financial participation should be adjustable to circumstances. This point is discussed in Sections V and VI.

Provision should be made for cooperation with other transportation agencies and other public bodies; this should extend to the authorization to receive financial aid and perhaps to give aid in the form of subventions to county or municipal governments or like agencies.

In matters requiring public vote, wherever feasible, provision should be made to avoid the influence of unstatesmanlike minorities as well as domination by the largest cities. The vote to activate a transit district, if that form is deemed desirable by the Commission and the legislature, would need to be on a district-wide basis to preclude the possibility of troublesome gaps in the transit system.

It seems fundamental, in conclusion, that the transit organization be given latitude to work out many features of its own organization as the needs arise in the development of the transit system. This applies as well to the methods of financing as to the selection of transit routes and facilities. The organization should have discretionary power to make contracts with private agencies which might engage in transit service.

Section IV

CAPITAL REQUIREMENTS AND INDEBTEDNESS

Capital Requirements for First-Stage System

Total capital requirements for the first-stage system under the optimum plan, using the more conventional type of supported train, would aggregate approximately 873 million dollars^{1/} (Table 6). This estimate includes the costs of construction computed specifically by the engineers, amounting to about 716 million dollars,^{2/} to which are added: financing costs, about 4.5 million dollars; interest during construction, about 48 million dollars; working capital needed in operations, about 5 million dollars; administrative expenses in preparing for operations, about 2.5 million dollars; the cost of rolling stock (transit cars), about 90 million dollars; and a provision for contingencies in financing and operations, about 7 million dollars--a grand total of additions amounting to about 157 million dollars.

Table 6 is based upon the assumption that rights-of-way will be paid for at the inception of the project and that costs of construction will be averaged over a five-year period. Rolling stock will not be needed until about the time construction is finished and most of it will be purchased for the first year of operation. Later purchases of cars will be on a more modest scale. It is assumed that after about 90 million dollars has been invested in cars, future expansions in the rolling stock needed for the first stage and replacements of cars can be paid for out of operating income without resort to additional bond issues for the purpose. It is also assumed that the service life of cars will average about 25 years.

Construction would take about five years. Since there would be no operating income until after construction, and then not on a large scale, it seems that payment for the system with current revenue is out of the question. This assumes, of course, that under the most generous concept, public support from tax sources could hardly be expected to reach as much as 190 million dollars in one year. This amount would be needed to pay for construction in the first year (the year of greatest expenditure), and an average of about 150 million dollars a year would be needed during the five-year period of construction. Bond financing, therefore, seems inevitable.

^{1/} For convenience in discussion, this figure has been rounded to 875 million dollars in some parts of this report.

^{2/} Tables A, B, and E show construction costs by major segments.

Table 6

SCHEDULE OF ESTIMATED CAPITAL REQUIREMENTS AND DEBT TRANSACTIONS
OPTIMUM PLAN--FIRST-STAGE SYSTEM

	Year from Beginning of Construction											
	Construction Period						Operating Period					
	First	Second	Third	Fourth	Fifth	Subtotal	Sixth	Seventh	Eighth	Ninth	Subtotal	Cumulative to Thirtieth
Right-of-way	\$ 51,264					\$ 51,264					\$ 51,264	\$ 51,264
Construction	133,003	\$133,003	\$133,003	\$133,003	\$133,004	665,016					665,016	665,016
Financing costs	800	800	800	800	800	4,000	\$ 500	\$ 50	\$ 40	\$ 35	4,625	4,625
Interest at 2.5 percent ^{1/}	3,950	6,688	9,495	12,375	15,520	48,028	17,333	17,092	16,771	16,391	115,615	304,657 ^{2/}
Working capital provided					5,000	5,000						5,000
Administrative expense for operation					2,500	2,500						2,500
Purchase of rolling stock (cars)							65,000	10,000	8,000	7,000	90,000	90,000 ^{3/}
Contingencies							7,000				7,000	7,000
Total Capital Expenditure	\$189,017	\$140,491	\$143,298	\$146,178	\$156,824	\$775,808	\$72,500	\$ 10,050	\$ 8,040	\$ 7,035	\$873,433	\$ 873,433 ^{2/}
Less public support during construction	31,000	31,000	31,000	31,000	31,000	155,000					155,000	155,000 ^{4/}
Capital expenditure added to debt	158,017	109,491	112,298	115,178	125,824	620,808	72,500	10,050	8,040	7,035	718,433	718,433
Debt Before Annual Retirement	158,017	109,491	112,298	115,178	125,824		693,308	683,691	670,823	655,629		
Less retirement: ^{5/}												
From operating income							6,000	7,000	8,000	8,000	29,000	200,062
From public support							13,667	13,908	14,229	14,609	56,413	\$518,371 ^{4/}
Debt at End of Year	\$158,017	\$267,508	\$379,806	\$494,984	\$620,808	\$620,808	\$673,641	\$662,783	\$648,594	\$633,020	\$633,020	0

^{1/} Added to capital costs and debt during 5 years of construction.

^{2/} Interest during construction of \$48,028,000 added to capital costs and debt. Beginning with the 6th year the public support of \$31,000,000 is allocated between interest and principal.

^{3/} Assumes cars have service life of at least 25 years. Additional cars would be paid for from additional income.

^{4/} Public support for capital costs \$673,371,000, including interest during construction, and for interest on debt after construction \$256,629,000, total \$930,000,000.

^{5/} Assumes combined payment for interest and principal of \$37,000,000 in 6th year, \$38,000,000 in 7th year, and \$39,000,000 in each year from 8th to 30th inclusive.

By lease arrangement for rolling stock, the amount of bonds required could be reduced by as much as 90 million dollars for the first-stage system. This would not result in any savings because the lessor would need to have a higher return on his investment than that which is paid on high-grade district bonds. The lease plan might be applied to other parts of the system or to the entire system, at least in theory. But the lessor would certainly demand a higher return than 2.5 percent a year, and in addition he would require a contract which would have the same force that a bond has as a fixed obligation.

Comparisons of Transit Costs and Debt

The maximum indebtedness for the first-stage system, under the assumptions of this study, would reach a little less than 700 million dollars before reductions would more than balance increases. This high figure is comparable to the 721 million dollars of debt estimated to be outstanding of all public agencies comprised in the nine counties of the Bay Area (Table 7). This estimate excludes revenue bonds not secured by liens on property and it excludes special assessment debt. A transit district would not be bound by the specific debt limitations of the other political subdivisions in the area.

In attempting to put the total capital requirements for the proposed transit system in true perspective, it is difficult to find another system with which direct comparisons are valid. The Bay Area system is planned for interurban passenger transportation, although it will serve local traffic to some extent within the largest urban centers. By its nature it will reflect the peak hour demands which cause high initial investment and poor ratio of passengers to car miles. However, because of the speed with which the service is to be operated, the operating expenses per car mile compare favorably with those of some cities where the load factor is better.

Table 8 shows a number of standard measures of cost and operation for some of the largest transit systems. In referring to this table, conclusions should be attempted with caution because of the lack of comparability of conditions and methods of reporting. However, within these limitations it still appears that the magnitude of the capital costs and the amount of debt for the Bay Area system are not out of the realm of reasonableness, especially if adjustments are made in the capital costs as shown for the systems which were mostly built or acquired at costs which prevailed many years ago. For example, the New York transit system is shown at a depreciated capital value of about 1.3 billion dollars, on which funded debt was about 945 million dollars as of June 30, 1955.

Table 7

PUBLIC BONDED INDEBTEDNESS OUTSTANDING IN BAY AREA COUNTIES
AT CLOSE OF FISCAL YEAR, 1953-1954^{1/}
(Thousands of Dollars)

	Type of Obligor				
	County	Cities	School Districts	Special Districts	Total
Alameda	\$ 9,330	\$22,131	\$45,483	\$ 92,454 ^{2/}	\$169,398
Contra Costa	11,545	7,695	30,732	7,767 ^{2/}	57,739
Marin	4,954	955	6,365	17,338 ^{3/}	29,612
Napa	784	3,040	3,629	784	8,237
San Francisco	—→	217,533 ^{4/}	←—	30,400	247,933
San Mateo	14,817	8,752	29,924	9,434	62,927
Santa Clara	10,319	12,556	34,818	9,732	67,425
Solano	81	7,796	5,668	--	13,545
Sonoma	954	2,818	7,754	1,138	12,664
Undistributed	--	--	--	51,773 ^{5/}	51,773
Total	\$52,784	\$283,276 ^{4/}	\$164,373 ^{6/}	\$220,820	\$721,253

^{1/} Excluding special assessment debt and revenue bond debt that is not a lien on physical property.

^{2/} Special District No. 1 of the East Bay Municipal Water District, \$20,960,000, included in Alameda. Balance undistributed, \$22,173,000.

^{3/} Includes Marin Municipal Water District, \$5,140,000, and North Marin Water District, \$2,000,000.

^{4/} Includes \$73,209,000 for school purposes. Grand total for all cities with school debt excluded, \$210,067,000.

^{5/} Includes Golden Gate Bridge and Highway District (including counties outside Bay Area), \$29,600,000, and East Bay Municipal Water District except Special District No. 1, \$22,173,000.

^{6/} Debt for school purposes, \$237,582,000 including \$73,209,000 for San Francisco.

Sources: State of California, State Controller, Annual Report of Financial Transactions Concerning Cities and Counties of California; Annual Report of Financial Transactions Concerning School Districts of California; and Annual Report of Financial Transactions Concerning Special Districts of California, for fiscal year 1953-54. Data on items in footnotes 2, 3, and 5 were obtained by direct report since they are not included in the reports of the State Controller.

Table 8

OPERATING DATA FOR RAPID TRANSIT SYSTEMS
IN SELECTED CITIES AND METROPOLITAN AREAS

	Chicago ^{1/} (for year ending 12-31-54)	New York (for year ending 6-30-55)	Cleveland ^{2/} (for year ending 12-31-54)	Boston (for year ending 12-31-54)	Toronto (for year ending 12-31-54)	First Stage, San Francisco ^{3/} (proposed)
Data on Area Served						
Description	Chicago and most of Cook County (85 municipali- ties)	New York City	Cleveland and 21 other munic- ipalities	Boston and 13 other munic- ipalities	Municipality of Metropolitan Toronto	San Francisco Metropolitan Area (6 counties)
Square miles	639	315	75	129	340	941 ^{4/}
Population (1950)	4.5 MM	7.9 MM	0.9 MM	1.5 MM	1.1 MM	2.2 MM
Property tax collected ^{5/}	\$ 108.4 MM	\$ 655.5 MM	\$ 37.5 MM ^{6/}	\$ 105.6 MM	\$ 60.7 MM	\$ 260.2 MM
Passenger automobiles registered	1.1 MM ^{7/}	1.1 MM	0.5 MM ^{7/}	0.2 MM ^{7/}	0.3 MM	1.1 MM
Rapid Transit Data						
Miles of line, subway and elevated	216.8	699.8	26.2	67.0 ^{8/}	13.3	246.2
Route miles	76.2	228.1	13.1	n.a.	4.6	123.1
Number of cars	1,341	6,574	68	503 ^{8/}	104	756
Number of stations	158	482	12	n.a.	12	50
Average miles between stations	0.5	0.5	1.1	n.a.	0.4	2.4
Number of employees	16,053 ^{9/}	33,100 ^{10/}	3,550 ^{9/}	7,661 ^{9/}	6,586 ^{9/}	1,070
Depreciated value of property ^{11/}	\$ 28.0 MM	\$ 1,300.0 MM ^{10/}	\$ 25.0 MM	\$ 127.0 MM	\$ 54.3 MM	\$ 700.0 MM
Funded debt above reserves ^{11/}	\$ 121.7 MM ^{9/}	\$ 945.0 MM ^{9,12/}	\$ 28.2 MM ^{9/}	\$ 120.7 MM	\$ 62.3 MM	\$ 600.0 MM
Passengers	111.2 MM	1,378.1 MM	n.a.	244.1 MM ^{9/}	70.0 MM	89.7 MM
Revenue car miles	43.3 MM	298.2 MM	41.8 MM ^{13/}	11.7 MM	n.a.	36.4 MM
Average fare	19.6 ¢	14.8 ¢	11.2 ¢	13.6 ¢ ^{9/}	9.5 ¢ ^{9/}	32.0 ¢
Fare revenue	\$ 21.8 MM	\$ 203.6 MM ^{9/}	\$ 27.1 MM ^{13/}	\$ 37.6 MM ^{9/}	n.a.	\$ 28.7 MM
Operating expenses	\$ 24.6 MM ^{10/}	\$ 197.5 MM	\$ 24.8 MM ^{9/}	\$ 38.1 MM ^{9/}	\$ 26.5 MM ^{9/}	\$ 18.8 MM
Debt service	\$ 7.5 MM ^{9/}	\$ 81.1 MM ^{9,12/}	\$ 1.4 MM ^{9/}	\$ 9.7 MM ^{9/}	\$ 4.6 MM ^{9/}	\$ 31.0 MM
Retirement	\$ 2.5 MM ^{9/}	\$ 37.4 MM ^{9,12/}	\$ 0.4 MM ^{9/}	\$ 5.7 MM ^{9/}	\$ 2.8 MM ^{9/}	\$ 22.5 MM
Interest and rentals	\$ 5.0 MM ^{9/}	\$ 43.7 MM ^{9,12/}	\$ 1.0 MM ^{9/}	\$ 4.0 MM ^{9/}	\$ 1.8 MM ^{9/}	\$ 8.5 MM
Total expense	\$ 32.1 MM ^{10/}	\$ 278.6 MM ^{9,12/}	\$ 26.2 MM ^{9/}	\$ 47.8 MM ^{9/}	\$ 31.1 MM ^{9/}	\$ 49.8 MM
Other Surface Operations						
Number of buses	2,506	n.a.	939	n.a.	115	n.a.
Number of coaches	649	n.a.	458	n.a.	140	n.a.
Number of street cars	495	n.a.	0	n.a.	888	n.a.
Total route miles, surface system	1,922	568	605	n.a.	319	n.a.
Fare revenue ^{13/}	\$ 97.2 MM	\$ 58.9 MM	\$ 27.1 MM	n.a.	n.a.	n.a.
Ratios—Rapid Transit Operation						
Revenue per car mile	\$ 0.50	\$ 0.68 ^{9/}	\$ 0.65 ^{13/}	\$ 3.21 ^{9/}	n.a.	\$ 0.79
Revenue per mile of line	\$ 100.6 M	\$ 29.1 M ^{9/}	\$ 1,034.4 M	\$ 561.2 M ^{9/}	n.a.	\$ 116.6 M
Value of property per route mile	\$ 0.4 MM ^{9,12/}	\$ 5.7 MM	\$ 1.9 MM	n.a.	\$ 11.8 MM	\$ 5.7 MM
Cars per route mile	17.6	28.8	5.2	n.a.	22.6	6.1
Passengers per car mile	2.57	4.62	n.a.	20.8 ^{9/}	14.9 ^{9/}	2.46
Total expense per passenger	\$ 0.28 ^{10/}	\$ 0.20	n.a.	\$ 0.20	\$ 0.44 ^{9/}	\$ 0.56
Passengers Per	101	1,253	n.a.	1,221	233	82
Debt service registered	\$ 6.82 ^{9/}	\$ 73.73 ^{9,12/}	\$ 2.80	\$ 4.85	\$ 15.33 ^{9,12/}	\$ 28.18
Population automobile	4.09	7.18	1.80	7.50	3.67	2.00
Total expense per capita	\$ 7.13 ^{10/}	\$ 35.27 ^{9,12/}	\$ 29.11 ^{9/}	\$ 31.87 ^{9/}	\$ 28.27 ^{9/}	\$ 22.64
Total expense as a percent of property tax	30%	43% ^{9,12/}	70% ^{6,9/}	45%	51%	19%
Operating expense per car mile	\$ 0.57 ^{10/}	\$ 0.66	\$ 0.59 ^{9/}	\$ 3.26 ^{9/}	n.a.	\$ 0.52

Note: Symbol MM indicates millions, M indicates thousands; n.a. indicates not available. Ratios computed after rounding.

1/ Chicago patronage and revenue data are for originating passengers only.

2/ Rapid transit data for Cleveland is based on six months' operation of the system which commenced operation early in 1955; some figures of necessity relate only to surface operations in 1954.

3/ Optimum plan, supported system, first stage to serve Alameda, Contra Costa, Marin, San Francisco, San Mateo, and Santa Clara counties. Full year of seasoned operation assumed.

4/ Route miles, less bridge segments, times eight.

5/ Latest year available.

6/ Based on taxes only in City of Cleveland.

7/ For the county.

8/ For 1953.

9/ Includes other than rapid transit facilities.

10/ Estimated.

11/ Excluding cars.

12/ Includes rolling stock.

13/ Not including rapid transit.

Sources: Annual reports of and correspondence with transit organizations in cities listed. San Francisco data from Parsons, Brinckerhoff, Hall and Macdonald—Engineers—New York.

The estimated total operating and financial expense of the first-stage system is less per capita than that shown for any of the cities in the comparisons that were made, except for Chicago; the same expense figure in relation to property taxes collected is considerably less for the Bay Area system than for that of any system in the comparisons (Table 8). On the other hand, the expense per passenger estimated for the Bay Area system is higher than all the others. This is due in large measure to the poorer load factor for the new system. In the other systems many of the passengers stand up in crowded cars; but interurban passengers will not patronize transit with uncomfortable conditions when alternative means are available, such as the automobile. The reliance on private automobiles is heavy in the San Francisco area.

If one were to consider the sum of the capital costs in the Bay Area for bridges, for highways, for streets, or for relocating urban centers, magnitudes at replacement cost for each classification would likely be as great as, or greater than, the capital costs of the proposed transit system. As a measure of the total property which might be affected by a major development such as the proposed transit system, reference might be made to the total assessed values in the combined nine-county area of about 4.6 billion dollars for the fiscal year 1955-56. Converted into estimated market value, using a factor supplied by the California State Board of Equalization, this becomes about 18 billion dollars (Table 9).

Level of Public Support Needed

As determined by the engineering study, the gauge of public support needed by the proposed transit system is the operating income in relation to total annual costs, including the costs of financing. The operating costs as well as the costs of construction are taken as fixed points of reference in the present study. It is assumed here that any alternatives of the physical plans or the fare schedules, or of arrangements through negotiations with governmental agencies to effect economies, have either been considered in formulating the engineering plans or are to be studied by research yet to be programmed. Thus, the present problem for consideration is the amount of public support that is needed to make possible the financing of the system as proposed. The amount of this support, in turn, is partially conditioned by the method of financing to be adopted.

As indicated in Table 4, the income from fares and other transit revenues is expected to be about 29 million dollars in a year of seasoned operation, and operating expenses about 19 million dollars, leaving

Table 9

ASSESSED VALUE, ESTIMATED MARKET VALUE, TOTAL LEVIES,
AND AVERAGE TAX RATES IN BAY AREA COUNTIES
AND IN CALIFORNIA

County	Assessed Value 1955-1956	Percent Assessed Value to Market Value	Estimated Market Value	Total • Levies 1954-1955	Average Tax Rate per \$100 Assessed Value	
					1954-1955	1955-1956 (preliminary)
Alameda	\$ 1,079,618	23	\$ 4,693,991	\$ 68,866	\$7.76	\$7.12
Contra Costa	613,192	23	2,666,052	34,965	7.85	6.51
Marin	135,469	23	588,995	8,393	7.73	6.52
Napa	58,065	25	232,260	3,143	5.84	6.94
San Francisco	1,264,198	25	5,056,792	83,532	6.74	6.99
San Mateo	519,741	25	2,078,964	30,692	6.45	6.91
Santa Clara	623,922	25	2,495,688	33,744	6.11	6.31
Solano	124,867	25	499,468	5,811	4.93	5.05
Sonoma	187,276	25	749,104	9,949	6.43	5.94
Total Bay Area Counties	\$ 4,606,348	25	\$19,061,314	\$ 279,093	\$6.65	\$6.48
Total for State	\$18,229,059 ^{1/}	25	\$72,916,236 ^{1/}	\$1,106,653	\$6.07	

^{1/} State totals based on 1954-1955 assessed value.

Source: California State Board of Equalization.

about 10 million dollars a year to be applied to the financing task, or to other transit purposes (Tables 4, 5, and E). It is suggested that about 8 million dollars of this income be applied to debt service and the balance to other transit purposes, such as improvements, reserves, or purchase of additional cars as traffic expands.

Looking again at the amount of debt as scheduled in Table 6, it is seen that public support of about 31 million dollars a year, from the beginning of construction, would result in bringing the indebtedness down to about 633 million dollars at the end of the ninth year, using interest at the rate of 2.5 percent. This debt of 633 million dollars could then be extinguished by the end of the thirtieth year with equal annual payments of about 39 million dollars, covering both interest and principal, plus a "balloon" payment of about 41 million dollars for the last year (Table F). This plan provides for serial bonds with maturities of 5 to 30 years. Of the annual payment for debt service, about 8 million dollars could come from operating income; the balance of 31 million dollars would need to come from public support. If operating results were to prove substantially greater or less than estimates, the need for public support would be changed proportionately.

The financing terms used in this example are in line with average rates and maturities prevailing in recent years on state and municipal issues with strong credit standings; they presume the power of the issuer to resort to taxes to supply funds for redemption of the bonds, although the power is not necessarily exercised when other revenues are adequate.

In the case of the proposed Bay Area rapid transit system, the opportunity to use revenue bonds is precluded by the lack of sufficient operating surplus. Of course, revenue bonds could be used to a relatively minor extent to supplement general obligation bonds. A good revenue bond, without security except that provided by operating income after prior charges if any, needs to be backed by revenue of about two to three times the bond requirements. Otherwise, the interest rate demanded by purchasers of the bonds would be much higher than that prevailing on high-grade faith and credit bonds.

Variations in the rate of interest or in the schedule of debt retirement both have appreciable effects upon the financial burden of the proposed transit system and upon the need for, duration, and amount of public financial contribution. If instead of using 2.5 percent interest (as in the example already given, with serial retirement of the bonds in 5 to 30 years, Table 6), 2 percent is used, the annual support from the public could be reduced from about 31 million dollars to about

29 million dollars. This means that a reduction in the rate of interest of 0.5 percent would save the public about 60 million dollars in 30 years (Table G).

If the maturity of the bonds were lengthened by five years and the interest rate were still 2.5 percent, the annual support from the public could be reduced from about 31 million dollars to about 27.5 million dollars; however, this would increase the total cost to the public about 32.5 million dollars. As an extreme example, if the interest rate were only 2 percent and the maturity of the bonds were extended to 40 years, the annual support from the public could be reduced to about 22 million dollars; this would make the total cost to the public about 50 million dollars less than in the first example where 2.5 percent interest and a 30-year maturity were used.^{1/} However, the first example seems more in line with reasonable expectations.

It can be assumed that bonds based on the faith and credit of a district comprised of the nine counties of the Bay Area would enjoy an interest cost which would be about as low as could be obtained by any agency, public or private, federal, state, or local. This primarily is due to two factors: strong credit rating and the exemption from income taxes which applies to income from bonds of political subdivisions.

Alternative Plans for Retiring Debt

In the suggested schedule of amortization of the debt of the proposed transit organization (Table F), it may be noted that the equal annual payment for debt service results in a slow reduction of debt in the early years; but the rate of reduction rises each year until in the final year most of the payment goes to reduction of the principal.

If an equal amount were to be applied against the principal each year, the annual payments would be largest at first, declining to the smallest amount in the last year. This would put a relatively higher burden on the present generation than would the level payment plan first illustrated.

Still another approach would be to defer the reduction of debt until maturity. This would call for a total debt of about 886 million dollars. The following tabulation shows the effect upon periodic and total cost of financing under this assumption:

^{1/} Table H contains a schedule of annual payments needed to retire debt according to varying terms and rates of interest.

Construction Cost of First Stage System	\$ 716,280,000
Financing Costs	4,625,000
Interest During Construction at 2.5 Percent	60,366,000
Working Capital	5,000,000
Administrative Expenses prior to Operation	2,500,000
Rolling Stock	90,000,000
Contingencies	<u>7,000,000</u>
Total	\$ 885,771,000
Interest at 2.5 Percent:	
Annual Interest, \$22,144,275 x 25	<u>553,607,000</u>
Total to be Paid for Principal and Interest	\$1,419,378,000
Less Sinking Fund provided from operating income at rate of \$8,000,000 per year for 25 years at 2.5 percent interest compounded semiannually	<u>273,262,000</u>
Public Support Needed to Pay Balance of Interest and Principal	\$1,146,116,000

Thus, if the bonds were to be refunded at maturity, public support would be needed at a rate of about 14 million dollars a year to cover the excess of annual interest cost over operating income which could be applied to interest; the full debt of 886 million dollars would still exist at the end of 30 years. If the 8 million dollars per year from operating income were accumulated in a sinking fund at 2.5 percent interest compounded semiannually, it would amount to about 273 million dollars and could be applied to the debt at maturity; in this event the public support each year would need to be equal to the interest cost of about 22 million dollars, and debt still left outstanding (or to be refunded) would be about 613 million dollars. Adding together this balance of debt and the interest cost over the 30-year period produces a figure for public support of about 1,146 million dollars, or about 216 million dollars more than would be needed with the serial bond retirement plan in the first example.

Deferring retirement of the debt needed to finance the transit system not only would seriously increase the cost of debt, but it would put an inequitable burden on a future generation whose financial condition

cannot be predicted. Although inflation could lighten materially such a burden on the debtor, it is a matter of speculation whether there will be inflation or deflation, and no one can forecast the degree of either. The use of bonds for the transit system may tend to have an inflationary effect on the economy, at least in the Bay Area if there is relatively full employment at the time the construction takes place. This undesired inflationary effect can be softened to the extent that the debt is shortened and to the extent that certain kinds of taxes are used to provide public support.

Aside from the unknown quantity of inflation or deflation in the future, it is possible to work on the basis of reasonable expectations for the years to come, particularly with reference to the growth of the area. A major part of the engineering study consists of population and economic projections. It is expected that population, industrial activity, and income will tend to move in substantial unison in the Bay Area as a whole during the next 40 years; that the growth will be appreciable is indicated even in the lower estimate of population growth. For instance, Bay Area population is projected as reaching about 4,800,000 by 1990 according to the lower estimate and by 1970 according to the higher estimate (Table 10). In the light of these expectations, the estimates of revenues and public support used in this financial study seem conservative, based as they are mainly on present economic conditions and population.

Capital Requirements for Subsequent Stages of Construction

The growth of the Bay Area will bring its own problems of financing public projects, not the least of which will be the expansion of the rapid transit system into a network to serve the nine-county area (Fig. 1). However, by a reasonable amortization schedule, the debt can be reduced to a size which, even when augmented by the additional debt for later stages of construction, should not exceed the high point in outstanding debt of about 700 million dollars to be reached in the sixth year after the beginning of construction of the first stage system (Tables 6 and 11).

Among the factors which are expected to alleviate the financial problems of the transit system in the future is the denser population which should produce a better utilization or load factor for the system, especially with reference to the central stations and water crossings to be built in the first stage to serve the expanded system. More people, more economic activity, and higher property values may more than offset the requirements for additional transit facilities. Against this favorable prospect is the threat of cost inflation in general, steeply rising costs for rights-of-way, and greater difficulty in converting property to transit use. Another possible difficulty is that transportation throughout the Bay Area might remain uncoordinated. This would violate the assumptions of a favorable "climate" for rapid transit as outlined in the summary of the engineering report in Section II above.

Table 10

POPULATION TRENDS THROUGH 1990 FOR THE UNITED STATES, CALIFORNIA,
AND BAY AREA COUNTIES

	1950	1954	1960		1970		1980		1990	
			High	Low	High	Low	High	Low	High	Low
United States	151,132,000	161,197,000	177,426,000	173,847,000	204,222,000	189,110,000	235,000,000	207,000,000	270,000,000	225,000,000
California	10,586,223	12,554,000	15,187,000	13,868,000	20,038,000	16,476,000	25,589,000	19,440,000	31,212,000	22,333,000
Alameda	740,315	838,900	967,000	903,000	1,233,000	1,021,000	1,508,000	1,130,000	1,780,000	1,240,000
Contra Costa	298,984	335,200	450,000	402,000	659,000	508,000	874,000	630,000	1,100,000	750,000
Marin	85,619	100,700	138,000	114,000	201,000	142,000	260,000	170,000	320,000	200,000
Napa	46,603	56,700	81,000	68,000	126,000	87,000	170,000	105,000	220,000	125,000
San Francisco	775,357	785,900	830,000	750,000	900,000	725,000	950,000	710,000	1,000,000	700,000
San Mateo	235,659	321,900	418,000	377,000	515,000	440,000	605,000	500,000	690,000	550,000
Santa Clara	290,547	373,200	501,000	446,000	726,000	554,000	950,000	670,000	1,150,000	775,000
Solano	104,833	117,800	154,000	135,000	215,000	164,000	290,000	200,000	390,000	235,000
Sonoma	103,405	121,700	152,000	137,000	213,000	164,000	283,000	195,000	350,000	225,000
Total Nine Counties	2,681,322	3,052,000	3,691,000	3,332,009	4,788,000	3,805,000	5,890,000	4,310,000	7,000,000	4,800,000

Sources: 1950 and 1954, United States Department of Commerce, Bureau of the Census.

1960-1990 for the United States and California, Stanford Research Institute.

1960-1990 for the San Francisco Bay Area Counties, Parsons, Brinckerhoff, Hall and MacDonald--Engineers--New York.

Table 11

SUMMARY OF ESTIMATED CAPITAL COSTS BY CONSTRUCTION STAGES

First Stage Construction Costs ^{1/}	\$716,280,000	
Additional Capital Costs (Table 6) ^{2/}	<u>157,153,000</u>	
Total Capital Costs--First Stage		\$ 873,433,000
Second Stage Extension Construction Costs ^{1/}	\$112,500,000	
Additional Capital Costs (21.94%) ^{2/}	<u>24,683,000</u>	
Total Capital Costs--Second Stage		\$ 137,183,000
Costs of Extensions Subsequent to Second Stage ^{1/}	\$716,000,000	
Additional Capital Costs (21.94%) ^{2/}	<u>157,090,000</u>	
		\$ 873,090,000
Grand Total Capital Costs--All Stages		\$1,883,706,000

^{1/} Parsons, Brinckerhoff, Hall and Macdonald--Engineers--New York.

^{2/} Estimated by Stanford Research Institute. For second and subsequent extensions, the ratio of additional capital cost to construction cost as determined for the first stage, or 21.94 percent, is applied. This may overstate the amount needed for rolling stock and for interest during construction for the second and subsequent stages.

Section V

SOURCES OF FINANCIAL SUPPORT

Raising money for capital costs of the system will likely be most difficult in the first-stage program. This is because of the large outlay needed in a relatively short period of time and because of the apparent venturesomeness of the undertaking, faced as it is with inability to pay its own way from income. In these circumstances the choice of sources is somewhat limited. Obviously if the funds are to be derived in such a way that no burden is felt there will need to be numerous sources, each one supplying a small fraction of what is needed. This would be almost impossible from an administrative as well as political point of view, and it would not likely be well received by the bond market.

The feasible choices of revenue sources seem to be essentially fare revenues, bridge tolls, taxes on tangible property, retail sales taxes, gasoline taxes, and probably some general state or federal aid. Any outside aid will need to be provided ultimately out of taxes; but in the case of state or federal aid, the income tax would be an appropriate additional means of obtaining public revenue (Table 12). The subject of state and federal aid is discussed in Section VI.

As a guide in the search for methods of financial support, the accepted criteria of public finance may be employed by modifying them slightly to include fare revenues which may be considered private support. These principles as adapted for application to the Bay Area rapid transit problem may be summarized as follows:

1. The yield should be large enough and dependable enough for the purpose at hand.
2. The benefits conferred by the transit system should bear reasonable relationship to the financial responsibility assumed by those who pay for it.
3. The charges, assessments, or levies made for rapid transit should be related equitably to ability to pay them.
4. The financing method used should not result in an unfair subsidy to any public or private enterprise, where another enterprise with the same aid could accomplish a better result in providing either rapid transit or some other service equally essential.

Table 12

REVENUE SOURCES OF FEDERAL, STATE, AND LOCAL GOVERNMENTS
Fiscal Year 1954

	Millions of Dollars	Percent
Federal Budget Receipts, 1953-1954		
Total	<u>72,456</u>	<u>100.0</u>
Individual income tax	32,479	44.8
Corporation income and profits taxes	21,595	29.8
Excise taxes	9,978	13.8
Customs	613	0.8
Estate and gift taxes	891	1.2
Employment taxes	4,998	6.9
Miscellaneous receipts	1,902	2.6
State Tax Collections, Fiscal Year 1954		
Total	<u>1,373</u>	<u>100.0</u>
Sales and gross receipts	800	58.2
Licenses	121	8.8
Individual income	96	7.0
Corporation income	126	9.2
Property	80	5.8
Death and gift	26	1.9
Severance	1	0.1
Unemployment compensation	123	9.0
Local Government Revenue from Own Sources, Fiscal Year 1953		
Total receipts	<u>1,626</u>	<u>100.0</u>
Total taxes	<u>1,034</u>	<u>63.6</u>
Property	935	57.5
Sales and gross receipts	57	3.5
Other	42	2.6
Charges and miscellaneous	316	19.4
Utility and liquor store	222	13.7
Insurance trust	54	3.3

Source: The Tax Foundation, Facts and Figures on Government Finance, 1954-1955.

5. The financing method should have a rational effect upon passenger transportation so that the optimum utilization of the facilities will be obtained and so that the traffic flow will be most benefitted.
6. Any limitations and conflicts in the methods employed should be so balanced as to result in a feasible program for raising the funds.

Fares and Other Transit Revenues

If it were possible to provide all funds from operating revenues, most of the ideals set forth here would be achieved by sole reliance on fares. However, there are two serious flaws in this approach to the Bay Area transit situation: (1) fares cannot, according to estimates of the engineers, provide more than half, or about 29 million dollars, of the total annual financial requirements of about 58 million dollars, including debt service; and (2) an attempt to obtain the maximum fare revenue would likely cause serious lack of utilization of the transit system, with attendant congestion of motor vehicle traffic. Neither of the two shortcomings is regarded as an argument against the use of fares; in fact, the engineering estimates of revenue reflect what seems to be about the optimum financial yield obtainable from the fares. In other words, to lower rates would not attract enough additional passengers to make up for the reduction, while to raise the charges would reduce patronage and gross revenues as well. Public acceptance of adequate mass rapid transit might alter this picture at some future date. This is mentioned here, although the study of fare policy was assigned to the engineers, merely because the financial planning should take into account the possibility of major changes in the operating income at some future time.

A variable fare, lower during the off-peak hours, as recommended by the engineers, would probably produce more net income than a constant fare. It would partly reconcile the conflict of principle between the highest revenue and the greatest utilization. In this connection it may be noted that freedom to adjust rates for optimum utilization would be hampered by the use of revenue bonds, just as it is made difficult by the need of private owners to make ends meet.

Inasmuch as the public will be called upon to give major financial support to the transit system, the public is in a position to demand service at costs to passengers which will promote the general welfare of the area. The persistent decline of the transit industry, which for

many years was predominantly owned by private investors, has created a widespread need for public financial aid and for public ownership in order to maintain service. The declining trends are reflected in Tables J and K.

Operating revenues other than fares are not expected to be large enough to have an important bearing on methods of financing. They would consist mostly of concessions to retail merchants and various types of service shops. Advertising would bring some additional income. Operation of its own businesses instead of granting concessions would require capital and management effort which seem out of proportion to the income to be derived.

Bridge Tolls

Bridge tolls are discussed next, not because they are next in importance, but because they should be correlated with transit fares. One of the assumptions made by the engineers in their estimates of operating results was that bridge tolls would not be lowered. If the tolls were increased, and especially if there were premium rates at peak hours, not only would traffic congestion be reduced but more commuters would use the transit system. The use of peak-hour premiums would not likely have an adverse financial effect, especially if this policy were applied to a coordinated transit and bridge operation.

The San Francisco-Oakland bridge has retired the initial bonds which financed its construction. Its revenue above maintenance and operating expenses is about 9 million dollars a year, and it is now pledged to support bonds for additional crossings of the Bay. To bring this income into a transit organization there would need to be a change in the federal law which granted an easement on Yerba Buena Island and which prescribes that the toll revenue may not be used for non-highway purposes. This seems to be a minor obstacle.

A more serious issue is the fate of the southern crossing. According to the engineering study, the need for an additional highway crossing from San Francisco to Alameda County would be obviated for 15 to 20 years by the rapid transit system. The use of an underwater transit tube would free two traffic lanes on the bridge for highway use; but more important, the marked improvement in trans-Bay service would attract many who now drive themselves to work in their own cars. Automobiles require several times the traffic space and a much higher capital cost than that needed by mass rapid transit to move an equal number of passengers. There seems to be an economic conflict between the two types

of Bay crossings. This is further sharpened by a restrictive provision in the legislation authorizing the southern crossing to the effect that no competing crossing of the Bay may be built within 10 miles of the southern crossing.

The integration of the Golden Gate Bridge with the transit system would seem desirable. The engineering report states that it is feasible to modify this bridge to hold the tracks for the transit crossing to Marin County. The coordination of bridge tolls with transit fares is important in this instance also. However, since there are bonds outstanding of about 25 million dollars which have a first claim on the tolls, the Golden Gate Bridge would be of little immediate help as a direct source of revenue for a transit organization. The bonds would need to be assumed or refunded by the transit organization if the bridge became a part of it.

It is understood that title to both the Golden Gate and the San Francisco-Oakland bridges is actually in the State of California. Hence, aside from meeting debt obligations, another agency of the state would not need to pay for the bridges in order to enjoy the revenue from tolls. The transfer would be in the matter of bridge administration only, according to the opinion of the Attorney General of the State of California (Appendix I).

Taxes on Tangible Property

Since the faith and credit of the transit district would be needed to make the transit bonds marketable on economical terms, a general property tax is indispensable. Such a tax need not necessarily provide all the funds needed to service the bonds so long as the taxing power is available as underlying security. This point was illustrated in the financing of the Golden Gate Bridge and Highway District bonds, which although serviced from revenues, enjoy the market standing that bonds of the City of San Francisco might enjoy. However, if the full amount of public support for the transit system, amounting to about 31 million dollars a year, were derived from property taxes, this would mean an average increase of about 67 cents per 100 dollars of assessed value if all property in the nine Bay Area counties were taxed uniformly (Table 1). This rate compares with a present total average tax rate of about 6.48 dollars per 100. The total levies on tangible property in the Bay Area counties were increased by about 48 million dollars in the latest year (Table I). This was an increase of about 22 percent; it was accomplished by a growth in property assessed and in higher average assessments, while tax rates changed little.

The property tax might be levied under two different rates--the higher one applying to a zone from which the major part of the patronage would come and the lower one from the balance of the counties in the general service area. This differentiation will be discussed in the following section. Hypothetical yields from a tax on property within a four-mile zone at 20 cents per 100 would be about 6.3 million dollars and from the entire area at 5 cents per 100, about 2.3 million dollars a year (Table 1).

The property tax, in addition to the reasons already given, may be appropriate to help support the transit system because property owners in general in the Bay Area should enjoy enhanced values as a result of the new facility. Evidence on this point is seen in the growth of residential areas along transit lines, and in the tendency of commuters to seek homes near transit service. From the standpoint of most business it should be an advantage to be able to draw customers and employees from the wider area which transit makes accessible.

Objections to using the overworked property tax are well celebrated. Most local governments have imperative needs rivaling those for rapid transit. Although it is often very difficult to administer fairly, the property tax is the only practical means of meeting most of these ordinary needs of local government. However, the property owner should be taxed to provide stability of income for the transit organization and security for its bonds, to achieve more equity among those who will support the transit system, and so that the transit organization can recapture a reasonable share of the added value to property which the transit system is expected to confer. In common with most other means of public financial assistance to the transit system, the property tax would allow the system to operate on whatever fares were deemed most advantageous to the over-all aims of the community.

Regional Retail Sales Tax

A retail sales tax collected for the transit region by the state, using the same sales basis as the state tax, would rate high because of high yield and dependability. It would probably meet with less objection from the public, if kept at less than one percent, than any other tax which might be used by the transit organization to produce an equal amount of revenue. A tax of less than one percent on taxable retail sales as of 1954-55 in the six counties to be served by the first-stage system would yield the entire public support of 31 million dollars needed each year by the transit system (Table 2).

Although a sales tax is not so closely connected with rapid transit fares, bridge tolls, or even property taxes, it does provide the most effective means for spreading the burden throughout the entire area and for diffusing it among all classes of people. To the extent that major categories of retail purchases, such as automobiles, furniture, and appliances, are subject to the tax, and because of the exemption of food, the tax is not highly disproportionate to ability to pay. However, the sales tax suffers somewhat in respect to the ability-to-pay principle when compared with income taxes, and to a lesser extent, when compared with property taxes.

Some opposition to the sales tax may come from those who would preserve the sales tax for more traditional functions than to help support a rapid transit system. Another source of objection might be merchants who think the sales tax must be borne in part by them, even though most of it is passed along to the consumer. If the tax were uniform throughout the area of either six or nine counties the loss of trade to lower-taxed areas would be negligible in the aggregate. However, the trade of some establishments may shift as a result of the accessibility that rapid transit would bring to some communities. By and large, the shifts would tend to compensate for each other. The general growth and prosperity of the area, aided by better traffic and transit conditions, could soon overcome most of the losses in trade in the localities affected. The sheer influence of the construction expenditures for the transit system would provide a trade stimulant. This should make a sales tax for transit purposes somewhat less objectionable.

The retail sales tax is firmly established in California where it is the largest source of income to the state; the California sales tax yields nearly double the amount collected by any other state from any source.

Regional Gasoline Tax

A tax on gasoline, administered in conjunction with the existing state and federal collections, would have some of the characteristics of the retail sales tax. Its yield could be substantial with a modest charge per gallon, and its impact would be widespread. At a rate of 3 cents per gallon the estimated yield on all gasoline sold in the six counties in which the first-stage lines would run would be about 31 million dollars a year. At one-half cent per gallon, the revenue would be about 5 million dollars.

The gasoline tax is committed strictly to highway purposes under an amendement to the constitution of the State of California. This provision has been vigorously maintained by those who argue that the user is taxed to pay for the use of highways and that to divert user funds to other purposes than highways is a breach of faith. Not only this, but supporters of this provision point to the gross inadequacy of present highway revenues to meet highway needs.

Although the highway program needs more funds than it receives, this is a reason, as viewed by some, for applying part of the funds where they could do the most to relieve congestion. Rapid transit, according to various engineering estimates, will service several times as many travelers going to and from work in the rush hours as will highways and motor cars to which the same cost or space is committed. The common transportation problem faced by motorists and transit passengers is an argument for use in rapid transit of at least part of the funds collected for the express purpose of benefitting the highway user.

There are many, but perhaps not a majority, who believe that highways should not be financed solely from current revenues, for the reason that they will benefit future users. Most other public programs which build for the future on such a scale resort to bond issues in order to obtain the benefits at an earlier date and at a lower current cost. In this way the community becomes more productive at an earlier date and there is a more equitable division of burdens among beneficiaries, present and future. However, there are only a few states which permit gasoline tax funds to be used for nonhighway purposes, and diversion is becoming less instead of greater. In view of the status of the tax in California it offers little promise as a source for rapid transit funds in the near future.

Other Sources of Financial Support

There are probably no sources of financial support which offer much encouragement besides fare revenues, a retail sales tax, property taxes, and bridge tolls, in about that order. Even the gasoline tax seems more likely to be available and worthwhile than any other source not yet discussed here.

There are some taxes producing good revenue which seem more appropriate for state or federal use than for a transit organization. The leading examples are the income taxes, payroll taxes, death taxes, special excise taxes, and duties. None of these could succeed as well as they do for the larger governmental units if administered locally

or throughout the Bay Area only. The reasons for this are apparent in the opportunity for avoidance which surrounds local applications and in the resultant high administrative cost. There are sound reasons from the standpoint of regulating the economy through fiscal measures why the present domain of these sources of revenue should not be invaded by a transit authority or district. If they are to provide funds for rapid transit it would be better administrative procedure to have the federal or state government make grants-in-aid than to share the taxes.

In concluding the subject of sources of revenue it should be noted that this present study has assumed that the engineering study has explored all of the important cost-saving devices such as free rights-of-way and joint use of property owned by the government. It is noted that the engineers believe that the use of excess condemnation (that is, the acquisition by eminent domain of property in excess of the exact requirements for rights-of-way) would not result in profits in excess of the amounts that might be needed to settle claims for damage caused by the construction and operation of the transit system.

The choice among the methods discussed in the foregoing pages will affect the way by which the financial responsibility for the transit system might be distributed over the various areas, sectors of the economy, or classes of people. The following section will explore more fully the allocation problem.

Section VI

FINANCIAL RESPONSIBILITY AND ITS ALLOCATION

General Financial Feasibility of the Transit Project

Having established the estimated financial requirements of about 875 million dollars, the necessity for bond financing to the extent of about 700 million dollars at the high point, and the hypothetical yields of the logical sources of revenue, it remains to inquire whether or not the first-stage project is financially feasible in the general sense. The answer to this question seems to be affirmative. However, only the test of time can verify this with finality. As to the later stages of the proposed system, the experience of the first stage will likely give convincing indications of their probable success. The physical and economic feasibility of the first stage, as planned by the engineers, is not dependent upon the completion of the later stages to a controlling degree.

Since the inability of the system to pay for itself from operating revenues is taken for granted, and since it is believed that sufficient bonds could be sold if based on the general credit of the area, the critical question becomes the amount of annual public support needed by the transit system in relation to the ability and willingness of the community to provide it. The consideration is roughly 28 to 33 million dollars each year for 30 to 35 years. It has been shown earlier that there are several individual sources of revenue which would be adequate to meet this demand without being distorted unreasonably. It will be shown below that a combination of sources reduces the impact of the public support to proportions which seem manageable. If this is so, feasibility of financing is established. However, feasibility is not the final test of acceptability of the transit system. Whether it is economically sound and whether it is better than some other undertaking are questions which are not within the scope of this study.

It may be of interest to make some rough comparisons of magnitude as between the proposed system and some existing public properties, keeping in mind that these comparisons are not intended to put an economic or social evaluation on the transit project. Total assessed values in the nine counties of the Bay Area are about 4.6 billion dollars for the 1955-56 fiscal year. Within a four-mile rapid transit zone (counting only property in incorporated cities any part of whose boundaries are within the zone), the assessed value is estimated at 3.2 billion dollars. The market value of these properties is estimated at four times the assessed value (Table 9).

The cost of replacing the nonresidential structures in the San Francisco metropolitan area (which does not include all of the Bay Area) was estimated in 1950 to be about 10 billion dollars.^{1/} Similarly, the four main bridges which span waters of the San Francisco Bay would have a replacement cost at today's prices about the same as the total cost of the first stage of the proposed transit system. The public school buildings would cost more to replace, as would the streets and highways in the area. Probably the water systems of the area would cost more to construct today than the proposed transit system. These comparisons may serve both to indicate the large size of the proposed undertaking and the fact that other projects, at the time they were executed, were of a similarly challenging size.

Another comparison of size is the amount of debt the project will require. The 700 million dollar figure is a little less than the amount of public debt outstanding of the cities, counties, and districts in the Bay Area, excluding revenue bonds not secured by liens on physical property and excluding special assessment bonds (Table 7). The outstanding debt of the state of California is a similar amount.

A comparison can also be made on a per capita basis. If the federal debt is apportioned on a per capita basis, about 1,650 dollars, and added to the area-wide debt and state debt, plus that proposed for rapid transit, the per capita total becomes about 2,350 dollars, of which the 225 dollars for rapid transit is about 10 percent.

In terms of annual payments required to pay for interest and principal on transit bonds, the estimated 31 million dollars is compared with total tax levies on tangible property in the Bay Area of about 279 million dollars in 1954-55. The shares per capita are 10 dollars and 90 dollars, respectively. These figures compare with per capita personal income in the Bay Area of about 2,100 dollars a year for the year 1952 (Table L). The annual public support for the transit system would be about 11 percent of the latest total levies. The levies increased about 48 million dollars in the latest fiscal year, or more than the amount needed by the transit program each year.

The total expenditures for government in the combined cities and counties of the Bay Area aggregated about 479 million dollars in the

1/ Stanford Research Institute, Estimating Replacement Costs Following Civil Disaster, December 1953.

fiscal year ending June 30, 1954 (Table M). Of this amount there were six separate categories with expenditures exceeding the annual amount which the transit system will need from public sources; they were general government, protection to persons and property, highways and bridges, charities and corrections, education, and miscellaneous.

Expenditures on the highway and street program in the Bay Area in the fiscal year ended June 30, 1954 aggregated about 113 million dollars, to which about 26 million dollars is contributed as purely local revenue. Much of the balance is covered from local collections by "user" taxes (Table N).

The foregoing examples of large expenditures are cited to indicate that if the transit program is economically sound it need not fail because it is too large to finance, provided the public wants it.

Allocating Financial Responsibility

Regardless of the areas, units of government, sectors of the economy, types of business, or classes of persons affected by the distribution of the burden of public support for the transit system, there are three general guiding factors which may be followed. These are the costs of the system, its benefits, and the ability to pay of the groups affected by the program. In attempting to follow these guides it is usually necessary, in practice, to depart from them in some degree for administrative reasons. These reasons, which are prominent in any problem of zoning the area or dividing it into districts, will receive consideration in a later part of this section.

Allocation on Basis of Capital Costs or Operating Results

One basis for allocating the financial responsibility for the system which is more logical than equitable is to apportion the burden according to the capital expenditures in each county or subdivision thereof. On a county-by-county basis the distribution would follow the amounts shown in Tables 13 and E. It will be seen that this will place the heaviest burden on the populous counties where the system is to serve the most people. However, the proportion of the population which would use the service directly may vary considerably from the proportion of capital cost. This is illustrated by Marin County, which with 10 percent of the capital costs of the first stage, has only 3.9 percent of the population of the six counties to be served (Tables 13 and O). Toward the opposite extreme is San Francisco, with 24.8 percent of the capital costs and 27.7 percent of the population.

Table 13

ESTIMATED TOTAL CAPITAL REQUIREMENTS AND ROUTE MILES
FIRST-STAGE SYSTEM, SIX BAY AREA COUNTIES

	Capital Costs		Route Miles	
	(000's)	Percent	(000's)	Percent
Alameda ^{1/}	\$318,220	36.4	38.63	31.4
Contra Costa ^{2/}	107,326	12.3	21.95	17.8
Marin ^{3/}	87,128	10.0	17.75	14.4
San Francisco ^{4/}	217,029	24.8	15.38	12.5
San Mateo ^{5/}	126,114	14.5	25.08	20.4
Santa Clara ^{6/}	17,463	2.0	4.33	3.5
Totals	\$873,280	100.0	123.12	100.0

1/ Includes 50 percent of the Transbay Crossing; the Oakland Terminal; Segments 2 and 3 of the Richmond-Decoto Route; and Segments 1 and 50 percent of Segment 2 of the Oakland-Concord Route.

2/ Includes Segment 1 of the Richmond-Decoto Route; 50 percent of Segment 2 and Segments 3 and 4 of the Oakland-Concord Route.

3/ Includes 50 percent of Segment 2 and Segment 3 of the Marin Route.

4/ Includes the San Francisco Terminal; 50 percent of the Transbay Crossing; Segment 1 of the Peninsula Route; Segment 1 and 50 percent of Segment 2 of the Marin Route.

5/ Includes Segments 2 and 3 of the Peninsula Route.

6/ Includes Segment 4 of the Peninsula Route.

Source: Parsons, Brinckerhoff, Hall and Macdonald--Engineers--New York. Division of segments estimated by Stanford Research Institute.

Operating results are more difficult to apportion to segments of the route than are capital costs. However, for the sake of comparison, a detailed breakdown which was adapted from data supplied by the engineers is presented in Table E. This shows a wide diversity of results. The disparities of this approach do not commend it for serious use in allocating the responsibility for public support. It may be observed by reference to Table E that the average cost to a passenger for a mile of travel on the transit trains is about 2.44 cents; this must be matched by an additional 2.50 cents from public support to cover the total costs including financing. By contrast, the public support per passenger mile on the Oakland-Concord route would be about 6.05 cents, while that for the Peninsula route would be only about 1.42 cents per passenger mile. Using a route-mile basis for allocating costs would produce still different results, but without any pattern of equity so far as the whole system or area is concerned.

In some cities the practice has been followed of having the city pay for the capital costs in building transit facilities which served not only the city but the outlying communities. Such a practice does not fit the concept of a unified interurban service for the entire area. The problem is not so much that the large cities would not carry their share, but that the other communities might decide not to. No bond issue which obligated the entire system would be workable unless all communities were bound or without an unfair burden upon cities cooperating in the area-wide program.

A more sweeping reason for not using the cost basis is that the service proposed for the transit system is an area-wide concept. The benefits are not local. The commuter who rides the transit system to work benefits the city where he works, and his employer benefits the commuter's town or residence by supplying income to the commuter. Passengers traversing any segment of the route are benefitted by the capital costs of that segment, regardless of their place of residence. Finally, all passengers profit by the station and yard facilities and the water crossings, the location of which is unrelated to the taxable domicile of the passengers using them. For these reasons, then, the cost basis for allocating is found wanting.

Allocation on Basis of Benefits Conferred

Associating the benefits of the transit system with the tax situs of beneficiaries is difficult, as intimated in the paragraphs above. In Boston, however, there has been a practice for a number of years which attempts to follow this guide. The taxes are assessed on a formula which

is supposedly based on the passenger traffic of various areas. But to use this method a survey costing many thousands of dollars must be made periodically to achieve equity. Even then, the process is sure to be challenged on grounds already explained. A glance at Table 14 showing the number of trips between and within six counties on an average weekday in 1954 will suggest the limitations inherent in origin and destination analysis in determining how to share costs of a transit system. Its complexities are compounded by the uncertainty of specifically who and what are benefitted by a trip.

A simpler approach is to use the population along the transit routes as indicators of the proportionate benefits. Unless entire, well-defined areas can be used, this also presents administrative and conceptual problems. However, since there are approximate correlations between population and many other indicators of cost, benefit, and financial capacity, population is one of the more satisfactory bases for apportionment. Population is distributed in the rapid transit area as shown in Table O.

Another measure of possible benefit is the property situated in the service area of the system. But as in the case of population, it is difficult to draw a line between property which benefits and that which does not, and just as difficult to determine the degrees of benefit. Even so, this concept is well established in assessing costs for other types of public service or governmental functions. Table P shows how the assessed value is apportioned to the counties and the hypothetical transit zone.

At this point mention is made of an advantage which the assessed value basis of apportionment has over some other methods: it can be used as the final allocation to the taxpayer. In the other methods discussed above, and in some to be discussed presently, the first apportionment is only to abstract areas; it remains, therefore, to make another allocation to taxpayers in the areas of apportionment.

Allocation on the Basis of Financial Ability

The property basis for allocation is one which attempts to recognize ability to pay. The deficiencies of property taxes in respect to this objective need not be examined in detail here, since they are well known. However, this weakness is not considered overwhelming by comparison with those possessed by other measures of ability.

The income of an area might be a basis for territorial distribution of the burden of public support. But there would still be the problem of

Table 14

NUMBER OF TRIPS BETWEEN AND WITHIN SIX COUNTIES ON AN
AVERAGE WEEKDAY IN 1954^{1/}

County	Alameda	Contra Costa	Marin	San Francisco	San Mateo	Santa Clara	Total
Alameda	867,918						
Contra Costa	135,582	83,080					
Marin	2,248	1,406	8,964				
San Francisco	122,718	28,507	41,944	^{1/}			
San Mateo	10,867	2,831	1,168	139,862	60,285		
Santa Clara	14,135	4,321	796	27,982	21,207	45,593	
Total	1,153,468	120,145	52,872	167,844	81,492	45,593	1,621,414

^{1/} Number of travelers in automobiles and transit, recorded in traffic survey made by engineers.

Many trips between districts within certain counties are excluded; e.g., no intra-San Francisco trips appear. All short trips which did not cross traffic survey cordon lines are excluded, also.

Source: Adapted from Parsons, Brinckerhoff, Hall and Macdonald-Engineers-New York, Regional Rapid Transit--A Report to the San Francisco Bay Area Rapid Transit Commission, January 5, 1956, pages 24 and 25.

assigning the charges to taxpayers. If the income tax device were used, there would be high regard to ability to pay. But administrative problems and broad questions of governmental fiscal policy as mentioned in the section on sources of revenue seem to preclude the present use of the income tax for final apportionment. However, the data in Table L may be used to indicate in part the relative ability of different divisions of the Bay Area to pay taxes.

Distribution of Responsibility in Relation to Financing

The practical influences which may control the choice of methods of placing financial responsibility for the transit system probably will stem mostly from the methods of financing to be used. It appears that bond financing will be a necessity. This has an important effect in dividing the burden between the present and future generations. The plan of debt retirement will determine how much or little of the cost will be borne by those living in the present. In the analysis of financial requirements it appeared that a level-payment plan to retire serial bonds would be appropriate, thus putting a reasonable proportion of the debt burden upon those living in the future.

The use of bonds makes a further determination with respect to the way the financial responsibility is fixed, in that the credit of the local government or regional organization must be pledged to give the bonds security. This means that the transit organization must have the power to tax. In the absence of new regional or local taxes, the only adequate tax would be that on property.

If bridge tolls are used, the charges for the benefit of the transit system will be borne by motorists from a wide area reaching far beyond the Bay Area. However, according to traffic surveys, the largest concentration of bridge traffic originates in the Berkeley, Oakland, and East Oakland areas. This pattern may change in the future, especially if rapid transit traffic becomes proportionately large.

The use of a sales tax throughout the area would spread the burden in rough proportion to retail purchases both in respect to geographic distribution and allocation to individual taxpayers. There is also a general correlation between retail sales and population, personal income, registered motor vehicles, and, on a county-wide basis, assessed value.

The gasoline tax makes a wide distribution of its burden over the area of the tax and beyond, and among different segments of the population, but its effects are more narrowly placed than those of a general sales tax.

Regional Distribution of Hypothetical Collections

The distribution of collections for transit fares and from hypothetical taxes among the counties, and in some cases portions of counties, may be traced in various tables to which reference has been made earlier. By way of brief summary, these references are as follows:

<u>Revenue Item</u>	<u>Table</u>
Transit revenues (by route segments)	E
Property taxes	1
Regional retail sales tax	2
Regional gasoline tax	3

Aside from the property tax, a region-wide distribution is far more practical than one based on a part of the area. There would be considerable avoidance of sales and gasoline taxes if they applied only to small zones. Even if they were used throughout six counties instead of nine there would be complications. However, if the three counties left out of the sales and gasoline taxes were cooperative with the transit program, they might agree to collect similar taxes for their own use. The fact that the other six counties were collecting the taxes would make this feasible, and in some cases the revenue would solve a critical problem, pending the time when the taxes would be needed to help pay for extensions of the transit lines.

A Hypothetical Transit Zone

Reference has been made to a hypothetical transit zone wherein the rate of public support would be higher than that outside the zone, or wherein the complete public support might be found. A fairly simple definition of the zone could be worked out by following the assumption made by the engineers that the transit lines will draw the bulk of patronage from a zone within four miles of the tracks. But to avoid surveying every piece of property along a border line, all property in incorporated cities might be included, plus all other property, any part of which city or property falls within the four-mile limit. Adequate machinery for handling hardship cases could be established. In certain of the tables in this report a zone has been defined along these lines, except that, in the interest of economy, no attempt was made to fill in the property (or population) outside incorporated cities within four miles of the transit tracks. This does not change any of the analysis in any important degree, since a high percentage of both population and property

are included in the incorporated cities along the proposed transit routes. This particular notion of a zone should not become a fixed concept without much further analysis. If it were not for the administrative problem, there should be an almost infinite number of zones to attempt to treat everyone with complete equity. But it has been seen in the earlier parts of this report that neither the costs, benefits, nor capacity to pay for the system follow any specific order with reference to geography. Therefore, the idea of a four-mile zone seems a practical compromise, or at least a talking point.

Combination of Methods of Deriving Public Support

It has been indicated that either the property tax, the retail sales tax, or the gasoline tax, barring legal obstacles and public disapproval through legal means, are capable of supporting the rapid transit system without disrupting the economy of the area. However, this approach is not thought to be as equitable or effective as to rely on several sources of financial assistance to supplement transit revenue. An infinite number of combinations and arrangements can be made on paper, and doubtless in practice. The effect of only three combinations will be illustrated here. All three combinations showing annual results under seasoned operations assume the maximum fare revenue will be at about 29 million dollars a year as soon as seasoned operations are in effect; that a minimum property tax of 5 cents per 100 dollars of assessed value will be levied throughout the nine-county Bay Area; that an additional tax of 20 cents per 100 will be levied on property located in incorporated cities any part of which are within four miles of the transit lines, and that a regional retail sales tax of one-half of one percent will be collected on retail sales throughout the nine-county area. The variables are bridge tolls and gasoline taxes.

Combination 1

Transit fares	\$29,000,000
Property taxes:	
5 cents per 100, 9 counties	6,336,000
20 cents per 100, transit zone	2,299,000
Bridge tolls	9,000,000
Regional retail sales tax, \$0.005	20,685,000
Regional gasoline tax, \$0.005	5,724,000
Total	<u>\$73,044,000</u>
Operating expenses and debt service	<u>57,826,000</u>
Excess of revenue over requirements	\$15,218,000

Combination 2

Transit fares	\$29,000,000
Property taxes:	
5 cents per 100, 9 counties	6,336,000
20 cents per 100, transit zone	2,299,000
Regional retail sales tax, \$0.005	20,685,000
Regional gasoline tax, \$0.005	<u>5,724,000</u>
Total	\$64,044,000
Operating expenses and debt service	<u>57,826,000</u>
Excess of revenue over requirements	\$ 6,218,000

Combination 3

Transit fares	\$29,000,000
Property taxes:	
5 cents per 100, 9 counties	6,336,000
20 cents per 100, transit zone	2,299,000
Bridge tolls	9,000,000
Regional retail sales tax, \$0.005	<u>20,685,000</u>
Total	\$67,320,000
Operating expenses and debt service	<u>57,826,000</u>
Excess of revenue over requirements	\$ 9,494,000

In each of these examples a sizable excess over requirements results. Rather than reduce the rate on the sales tax, it has been assumed here that the excess might be available to cover the possibility that some one or more of the hypothetical sources would not be available. In the event that enough sources could be used to produce an excess at these rates, the rates could be reduced where the tax seems most burdensome, across the board, or maintained. If maintained, the excess revenue could be given back to local communities to provide for financing local transit, feeder service, to provide more parking space, or for general governmental purposes. Obviously, there are numerous other arrangements which a combination of tax sources permits.

County-by-County Distribution of Financial Responsibility

Much has been said above about the assumption of a unified transit system in the analysis of the financial and organizational aspects of the program. This assumption seems to rule out, from a physical and economic standpoint, anything which could be separately assumed by the counties. On purely financial grounds, the county does not seem the appropriate unit to sell bonds and administer taxes except for the property tax; this tax should be administered by the counties as in the past and the appropriate amount allotted to the transit organization.

The county might be given the option to adjust the proportions of the property tax to conform to any special source of revenue it might use that is not employed on a region-wide basis, such as utility taxes or amusement taxes.

State Aid for Rapid Transit

Aid from the state should be premised either upon benefits conferred by the rapid transit system to the area beyond the regional boundaries or upon inability of the region to finance itself. The first reason may be difficult to support quantitatively, and the second assumes that there are other more prosperous parts of the state which should aid the Bay Area or that a transit region would not have the same opportunity to collect taxes as the state enjoys. Neither reason seems justifiable in this instance, except that in the matter of rights-of-way the state could be of immediate assistance. Prompt action in acquiring rights-of-way will doubtless save many millions of dollars. The normal delay in setting up a transit region with full financial powers may prove costly. Therefore, it would be reasonable to ask for state assistance now, which of course could be repaid when the transit organization is perfected.

Financial assistance from the state would not normally be committed for a long period and should not therefore be counted upon as any form of security for bonds to be issued by a regional organization.

Federal Aid for Rapid Transit

The case for federal aid for the Bay Area rapid transit program may be made largely on grounds of national defense, aid to military personnel and civilian employees in defense establishments, and savings in the freeway program into which federal funds are to flow. All

of these reasons apply to many other metropolitan areas; therefore, any assistance to the Bay Area would call for a major nation-wide program. As in the case of state aid, it is difficult to argue for financial aid to an area with the relatively favored position the Bay Area enjoys in the national economy. The federal government, in normal times, cannot finance its projects as economically as local units of government whose securities enjoy tax exemption which does not apply to those of the federal government. However, if assistance is to be forthcoming from either the federal government or the state, there should be provision for the transit organization to accept it if only because of the benefits which the state and nation will derive from the transit system.

Section VII

SALIENT POINTS OF THE REPORT

Financial Feasibility

The proposed Bay Area rapid transit system as planned for the first stage by the engineering firm of Parsons, Brinckerhoff, Hall and Macdonald, seems to be within the practical financial capacity of the Bay Area without federal aid and without state assistance. However, state assistance in the near future on the financing or acquisition of rights-of-way would probably save millions of dollars.

A variety of financial approaches, using several sources of public support to provide about 28 to 33 million dollars a year, seem feasible within the general framework of the laws of California. The financial problems of the proposed system could be solved by the conventional methods found in use in the United States, although a different combination of these methods and different emphasis from that found elsewhere is called for in the Bay Area.

Regional Organization

In keeping with the engineering concept of a unified transit system, a regional organization seems to be needed with a broad grant of authority over service areas, routes, standards of service, and rates, as recommended by the engineers in the interest of economic success.

The large financial requirements of the program further suggest a public regional organization, preferably a district with full taxing power. However, any regional organization should be properly coordinated with other regional and local functions of government to insure the public interest. The general management, which should be by a well-paid professional transit operator, should have complete administrative authority.

Combination of Methods of Obtaining Public Support

To achieve the greatest equity and to provide ample public financial support for the transit system, the regional organization would need the power to use a combination of taxing methods. The most promising types seem to be property taxes, with a low rate for the

entire nine-county area and a higher rate for a transit zone within service distance of the transit lines, and a regional retail sales tax of not over one-half of one percent. In addition, the tolls of the San Francisco-Oakland bridge might be appropriate for support of the transit program, particularly if the transit system, as concluded by the engineers, could postpone the need for a southern crossing of the Bay for many years.

Flexibility in Organization Structure and in Financing

The studies concluded thus far in the program of research for the San Francisco Bay Area Rapid Transit Commission are not designed to arrive at decisions, but to furnish members of the Commission with information and analyses which will assist them in formulating a program of action if they deem the findings sufficiently indicative of a course to follow. It appears that any program to be followed in carrying out the plans for organizing and financing the proposed system would profit if the governing board of the transit organization had wide latitude to meet financial problems as they arise. This would seem preferable, if accountability can be secured, to having the powers and duties of the management determined in detail by law.

A P P E N D I X I

Appendix I

OFFICE OF THE ATTORNEY GENERAL
State of California

EDMUND G. BROWN
Attorney General

OPINION

:

of

:

EDMUND G. BROWN
Attorney General;
Ralph W. Scott and
Ernest P. Goodman,
Deputy Attorneys General

:

No. 55/175

:

JANUARY 17, 1956

:

THE SAN FRANCISCO BAY AREA RAPID TRANSIT COMMISSION
has raised. . . questions [to which answers are given and analyses are
made as follows]^{1/}:-

- 1 (a). Can a statutory enabling act provide for the formation
of a rapid transit district consisting of nine Bay Area
counties, or designated fractions of counties, wherein
a straight majority of affirmative votes within the dis-
trict as a whole makes the authority of the district bind-
ing upon all communities within the district?

This question warrants an affirmative reply.

It is well established in this State that the Legislature has plenary
power, limited only by the provisions of the State Constitution. As
said in Fitts v. Superior Court, 6 Cal. 2d 230, at page 234, the courts
"do not look to the Constitution to determine whether the legislature is
authorized to do an act, but only to see if it is prohibited."

^{1/} This material has been slightly rearranged to save space in
reproduction.

We are not aware of any provision of the California Constitution which prohibits the Legislature from authorizing the formation of a special rapid transit district wherein a majority of affirmative votes within a district as a whole would be binding upon all of the area comprising the district. In this respect the power of the Legislature is explained by In re Madera Irrigation District, 92 Cal. 296, at page 308, where the court said:

"In providing for the welfare of the state and its several parts, the legislature may pass laws affecting the people of the entire state, or when not restrained by constitutional provisions, affecting only limited portions of the state. It may make special laws relating only to special districts, or it may legislate directly upon local districts, or it may intrust such legislation to subordinate bodies of a public character. It may create municipal organizations or agencies within the several counties, or it may avail itself of the county or other municipal organizations for the purposes of such legislation, or it may create new districts embracing more than one county, or parts of several counties, and may delegate to such organizations a part of its legislative power to be exercised within the boundaries of said organized districts, and may vest them with certain powers of local legislation, in respect to which the parties interested may be supposed more competent to judge of their needs than the central authority. . . . "

Many instances can be cited where utility districts comprising more than one county have been authorized by the Legislature. Thus, the San Francisco Bay Area Metropolitan Rapid Transit District Act (Calif. Stats. 1949, ch. 1239, as amended) provides enabling legislation for the creation of such a district within nine counties of the Bay Area. Here, the formation of the district is predicated on an election and an affirmative vote within certain designated areas. Another example of such enabling legislation is to be found in The Local Hospital District Law (Health & Saf. Code secs. 32000 et seq.) pursuant to which the formation of such a district is predicated upon the favorable vote of a majority within the proposed district (cf., Paso Robles etc. Hospital District v. Negley, 29 Cal. 2d 203). Reference is also had to the provisions of section 9000 et seq. of the Public Resources Code, providing for the formation of soil conservation districts, comprising lands in one or more counties (Pub. Res. Code sec. 9063) upon the majority of votes cast by the landowners of the proposed district (Pub. Res. Code secs. 9140 and 9144).

Although an enabling statute of the type here proposed might be classified as a special, rather than a general, law, we do not think such legislation would contravene the provisions of article IV, section 25 of the California Constitution for the reason that a general law could not be made applicable because the physical characteristics peculiar to the area are not State-wide (cf., Alameda etc. Water District v. Stanley, 121 Cal. App. 2d 308, 314-315).

- 1 (b). Can the same system of voting apply to taxation of property and to issuance of district bonds to provide funds for construction or operation of the rapid transit system?

This question also warrants an affirmative reply, provided that the obligation of the district to meet principal and interest payments on general obligation bonds could not be impaired by any limitation on the power of taxation.

What has been said hereinabove with respect to the creation of a rapid transit district is equally applicable to the power of the Legislature to provide by statute for the same system of majority voting by which general obligation bonds may be authorized and issued to carry out the purposes of the district; namely, the construction and operation of a rapid transit system. The development of such a system is a State purpose (cf., Golden Gate Bridge etc. District v. Felt, 214 Cal. 308, 321; Wheatley v. Superior Court, 207 Cal. 722, 726). In furtherance of such a program the Legislature may prescribe the method of taxing property within the district to raise money sufficient in amount to discharge district functions and obligations including the payment of principal and interest on such bonds (cf., Golden Gate Bridge etc. District v. Felt, 214 Cal. 308, 320-324; In re Orosi Public Utility District, 196 Cal. 43, 58; Joint Highway District No. 13 v. Hinman, 220 Cal. 578; Paso Robles Hospital District v. Negley, 29 Cal. 2d 203, 206; In re Validation of East Bay etc. Water Bonds of 1925, 196 Cal. 725). However, if the enabling statute authorized the issuance of general obligation bonds upon the vote of a majority of electors residing within the district, it could not, of course, authorize the electors to vote down the imposition and collection of taxes sufficient in amount to meet the obligations of those bonds without impairing the validity of the contract between the bondholders and the district itself.

- 1 (c). Can the district be empowered to delegate the management and operation of a transit system, including expenditures for construction and improvements, to a policy-forming board and to officers appointed by that board?

The answer to this question is in the affirmative. The district statute creating an executive officer or committee (even though designated a "policy-forming board") should carefully define the authority of the officer or committee in order to avoid a conflict with the district board of directors.

It is well established that public officers have no power to delegate discretionary power which has been conferred upon them by statute (cf., 21 Cal. Jur. sec. 63, pp. 881, 882, and cases cited). On the other hand, public officers may appoint agents to discharge ministerial duties and functions.

There is no doubt, however, that a statute authorizing the creation of a rapid transit district could provide for the management and operation of the district and its facilities by an executive officer or executive committee which might be designated as a "policy-forming board" of the district. Such a statute could also delegate policy-forming functions to the executive officer or executive board provided adequate standards for this policy-forming function were set forth (Tarpey v. McClure, 190 Cal. 593, 600).

Needless to say, the distribution of power between the district board and the executive officer or committee should be carefully defined in order to avoid conflict as to the relative authority of each.

Even in the absence of specific authorization in the statute itself, a public utility district ordinarily has implied power, arising out of its general powers to appoint an agent, however designated, to perform ministerial functions under the direction and supervision of the governing board of the district (cf. Crawford v. Imperial Irrigation District, 200 Cal. 318, 334).

- 1 (d). Can the district be empowered to place the operation of the transit system in the hands of a private contractor, and can the private contractor be granted immunity from taxation on the transit property?

The first part of question 1 (d) warrants an affirmative reply, provided the district maintains stringent control over its facilities and the rates and charges imposed on the public for their use. In reply to the second half of question 1 (d) the private contractor would not be immune from taxation on any possessory interest in the transit system which he might acquire pursuant to contract with the district.

It has been held on many occasions that a public utility district may acquire facilities and then lease them to private persons (Paso Robles etc. District v. Negley, 29 Cal. 2d 203, 206; City of Oakland v. Williams, 206 Cal. 315; Byington v. Sacramento Valley etc. Co., 170 Cal. 124; San Francisco v. Linares, 16 Cal. 2d 441; Lynch v. San Francisco, 3 Cal. 2d 141). However, this power has recently been qualified by the decision in San Francisco v. Ross, 44 Cal. 2d 52, in which the Supreme Court laid down the rule that eminent domain cannot be invoked by a governmental agency to acquire property for a public purpose where the property is to be turned over to private parties without the reservation of governmental control of the rates and charges for use of the facilities by the public. Therefore, it follows that the rapid transit district could be empowered by statute to lease or otherwise turn the operation of the transit system over to a private contractor provided that the district maintains stringent control over the facilities of the district and its rates and charges imposed on the public for their use. Moreover, it does not appear that article XI, section 13 of the California Constitution which prohibits the Legislature, among other things, from delegating to a private corporation control over municipal or local functions, has any application to districts which serve a State-wide purpose (Doyle v. Jordan, 200 Cal. 170, 192).

Our answer to the second part of your question 1 (d) is in the negative. Article XIII, section 1 of the California Constitution provides that all property which is not exempt either under the provisions of the California Constitution or under the laws of the United States, is subject to taxation according to its value. The possessory interest acquired by a lessee is property within the meaning of article XIII, section 1, and is subject to taxation, according to its value (Kaiser Co. v. Reid, 30 Cal. 2d 610). The district statute could not exempt the contractor from taxation of the possessory interest he would acquire if the property were leased to him by the district. It might, of course, be possible for the district to enter into a contract with a private person for the management and operation of the district which would not give the private party a possessory interest in the property. In such a case, the private party would have no property interest to be taxed.

2 (a). Can vehicle license fees or taxes on motor fuel be levied within the district to provide funds for the transit district?

With respect to this question, we have serious doubts as to the propriety of a tax on motor vehicle fuel and on vehicle registration and license fees to be used for rapid transit purposes in the absence of the constitutional and statutory amendments outlined in our answer to question 2 (b); namely, amendment of article XXVI of the California Constitution and sections 8351, et seq., and 11001, et seq. of the Revenue and Taxation Code.

Article XXVI of the California Constitution requires the proceeds from any tax "imposed by the State" on motor fuel or motor vehicle registration and license fees to be used "exclusively and directly for highway purposes". In order to determine if this section prohibits the levy of a tax on vehicle license fees and motor fuel to provide funds for the transit district, it is necessary to consider first, whether the State would be prohibited by article XXVI from imposing a tax on motor vehicle fuel and vehicle registration and license fees for the development of a rapid transit system, and second, whether the rapid transit district itself could impose such a tax.

Article XXVI defines highway purposes as "The construction, improvement, repair and maintenance of public streets and highways, whether in incorporated or unincorporated territory, for the payment for property, including but not restricted to rights-of-way, taken or damaged for such purposes and for administrative costs necessarily incurred in connection with the foregoing". In addition, article XXVI authorizes the utilization of a portion of the net revenues from taxes on motor vehicle fuel and motor vehicle registration and license fees for the payment, redemption, discharge, purchase, adjustment and refunding of special assessments or bonds or coupons issued prior to certain dates designated therein for street or highway purposes as set forth in the definition quoted above.

It is our understanding that the primary function of the rapid transit district will be to create facilities for the mass transportation of passengers and that the district will not be directly concerned with the development of improved facilities for the use of automobile traffic. It is our opinion that under such circumstances a State tax to finance the activities of the rapid transit district would be prohibited by article XXVI of the California Constitution since the development of a rapid transit system does not fall under the definition of the term "highway purposes" as used in article XXVI.

It is uncertain whether a tax levied by the rapid transit district itself on motor vehicle fuel or motor vehicle registration or license fees would be regarded as a tax "imposed by the State" in violation of article XXVI. In Golden Gate Bridge etc. District v. Felt, 214 Cal. 308, it is indicated that a bridge district may be regarded as being organized for State purposes. There is, therefore, a definite possibility that the courts would conclude that a rapid transit district is to be regarded as a State agency for purposes of article XXVI and that the prohibitions contained therein would apply to such a district. If the court concluded that a tax levied by a rapid transit district was a tax "imposed by the State", the prohibition contained in article XXVI would invalidate such

a tax. Since this matter is not free from doubt, it would appear undesirable to make the financial structure of the rapid transit district depend on a type of tax which might be declared invalid at some future time.

- 2 (b). What changes, constitutional or statutory, would be required to permit application of revenues for rapid transit purposes from 1) State motor vehicle fuel taxes and 2) "in lieu" taxes?

Article XXVI might be amended to expressly provide for the allocation of a portion of the revenues from motor fuel taxes and from registration and license fees on motor vehicles for rapid transit purposes. If such an amendment took place, it would be necessary also to amend sections 10701, et seq. of the Revenue and Taxation Code relating to the imposition and allocation of "in lieu" taxes and section 8351, et seq. of the Revenue and Taxation Code relating to the allocation of motor vehicle fuel taxes. As an alternative, article XXVI might be amended to provide that nothing contained in that article should be construed to restrict the imposition by a rapid transit district of a tax on motor vehicle fuel and motor vehicle registration and license fees.

- 2 (c). Can the State contribute toward the construction or operation of a Bay Area rapid transit system, using either general funds or funds collected specifically for transit purposes?

It is our opinion that it would be permissible for the State to contribute funds to be used for rapid transit purposes pursuant to a statute providing for State-wide subvention of rapid transit districts. There are several provisions for the California Constitution which must be considered in relation to the validity of such contributions, namely: article IV, sections 22 and 31, prohibiting gifts of public money; and article XI, section 12, prohibiting the State from imposing taxes for county, city, town or other municipal purposes, i.e., for local purposes. The constitutionality of contributions by the State to activities carried on by municipal corporations and by special districts has been presented to the California courts on a number of occasions and has generally been upheld on the ground that the funds which were to be used were for a State-wide purpose rather than for a local purpose. Thus, in Bacon Service Corp. v. Huss, 199 Cal. 21, the court upheld an act imposing a State license tax on contract motor carriers, providing for the appropriation of half of the tax so collected to the State Treasury and the appropriation of the other half to the counties to be devoted exclusively to the maintenance and repair of public highways within the county, on the

ground that the purpose of the appropriation was State-wide and not local. The court in the Huss case also relied on section 26 of article IV of the State Constitution authorizing the Legislature to extend aid for the construction and maintenance in whole or in part of any county highway. In City of Los Angeles v. Riley, 6 Cal. 2d 621, the court upheld appropriation of a portion of the motor vehicle license tax imposed by the State for use by cities for law enforcement and the regulation and control and fire protection of highway traffic on the ground that such activities were for State purposes. In City of Los Angeles v. Post War etc. Board, 26 Cal. 2d 101, the court upheld State appropriations for local construction projects on the ground that a State purpose was served thereby, namely: combating postwar unemployment.

An appropriation by the State for a State purpose, therefore, does not violate the provisions of the California Constitution since it is neither a gift of public money within the meaning of article IX, sections 22 and 41, nor is it a tax imposed for a local purpose within the prohibition of article XI section 12.

Applying these principles to the facts here involved, it seems apparent that the development of rapid transit is a State-wide purpose within the meaning of the cases discussed above. Certainly, the development of rapid transit in the Bay Area is important to the interests of the whole State in the same manner as the development and repair of highways within a county is of State-wide concern (Bacon Service Corporation v. Huss, 199 Cal. 21; Golden Gate Bridge etc. District v. Felt, 214 Cal. 308, 321). The cases discussed above establish the validity of a State-wide scheme for the subvention of activities of a district which promote a State purpose. If the subvention of rapid transit districts is carried out under a State-wide scheme for the subvention of such districts, it is our opinion that its validity would be upheld. An appropriation for such purpose could be made either from general funds or from a State tax specifically imposed for this purpose.

2 (d). Can the State apply bridge toll revenues to rapid transit purposes?

Our answer to this question is also in the affirmative, subject to the constitutional and statutory restrictions on the impairment of the obligation of the bondholder's contracts, and in the case of the San Francisco-Oakland Bay Bridge, the restrictions imposed by federal and state statutory provisions with respect to the use of tolls from that bridge.

It does not appear that the revenues arising from tolls collected on any toll bridge in this State could be used for rapid transit purposes so long as the toll bridge has any outstanding bonded indebtedness. Any diversion of toll revenues of bridges constructed under the California Toll Bridge Authority Act to rapid transit districts would, under such circumstances, be violative of section 30236 of the Streets and Highways Code, which provides as follows:

"The bond redemption and interest payments constitute a first direct and exclusive charge and lien on all tolls and other revenues, and interest thereon, and sinking funds created therefrom received from the use and operation of the particular toll bridge or other highway crossing. Such tolls and revenues together with the interest earned thereon constitute a trust fund for the security and payment of the bonds and shall not be used or pledged for any other purpose as long as any such bonds are outstanding and unpaid."

Moreover, section 27300 of the Streets and Highways Code contains similar restrictions on the use of tolls collected under the Bridge and Highway District Act (Sts. & Hy. Code secs. 27000, et seq.). In addition, any use of toll revenues which was violative of the contractual rights of the bondholders would also be prohibited by the "impairment of contracts clause" of the United States Constitution (art. I, sec. 10).

On the other hand, in the event that there are no outstanding bonds secured by the revenue from a particular bridge, and the revenues of the toll bridge are not committed to secure other bonds or contractual obligations, it is our conclusion, in the absence of specific statutory provisions to the contrary, that such toll revenues could be used for rapid transit purposes.

With respect to the use of tolls from the San Francisco-Oakland Bay Bridge, however, it is also necessary to consider the restrictions on the amount and use of bridge tolls which is imposed by the federal permissive statute by which Congress consented to the construction of that bridge and the crossing of the federal reservation on Goat Island. This federal statute titled "An Act Granting the consent of Congress to the State of California to construct, maintain, and operate a bridge across the Bay of San Francisco from the Rincon Hill district in San Francisco by way of Goat Island to Oakland" was passed in 1931 (46 Stats. 1192) and was amended in 1953 (67 Stats. 202). This statute provides that the tolls from the San Francisco-Oakland Bay Bridge must be used either for the operation, maintenance and repair of the present bridge, and the retirement of its indebtedness, or for the

construction, operation, maintenance and financing of not to exceed two additional highway crossings across the San Francisco Bay. Unless this federal statute is amended, tolls from the San Francisco-Oakland Bay Bridge would not be available for use by the rapid transit system.

In addition, it is to be noted that the tolls from the San Francisco-Oakland Bay Bridge are to be committed as security for bonds for the so-called "Southern Crossing" of the San Francisco Bay (Sts. & Hy. Code secs. 30605, 30608 and 30656). Even though no bonds for the "Southern Crossing" are outstanding, it would appear necessary to amend the statutory provisions referred to above before revenues from tolls collected on the San Francisco-Oakland Bay Bridge may be applied for rapid transit.

2 (e). Can the transfer of title to the San Francisco Bay Bridge be made to the transit district by means of the district statute?

Our answer to this question is in the affirmative, with the qualification that the concept of "transfer of title" when applied to property such as the San Francisco-Oakland Bay Bridge from one public agency to another really involves only a transfer of management.

It is our view that a "transfer of title" to a bridge could be made to the rapid transit district by means of the district statute so long as such transfer did not impair the security for any outstanding bonded indebtedness pledged to be paid out of toll revenues of such bridge. It is our understanding that at the present time all of the bonds of the San Francisco-Oakland Bay Bridge have been retired. Under such circumstances, it would not appear that prohibitions against impairment of contracts would be an impediment to the transfer of the San Francisco-Oakland Bay Bridge to the rapid transit district.

It is our opinion, moreover, that a "transfer of title" to the rapid transit district would merely constitute a change in the management of the bridge. In 5 Ops. Cal. Atty. Gen. 158, there is a detailed discussion of the nature of the respective interests of the Golden Gate Bridge District and of the State of California in the Golden Gate Bridge. It is there pointed out that it is established by decisions of the California Supreme Court that a district of this kind has no proprietary interest in its physical properties as against the State. It is our view that in like manner a transfer to the rapid transit district of the title to the San Francisco-Oakland Bay Bridge would not create any proprietary interest in the district in the physical properties of the bridge as against the State of California. Such a transfer would, of course, permit a change in the

management of the affairs of the bridge to coordinate its operations with the other functions performed by the rapid transit district.

- 3 (a). To what extent are the amounts and terms of bonds and of taxes to service bonds of the district limited by existing law or city or county charter provisions?

Answering this question, there are no current limitations on the amount and terms of bonds which might be issued by a rapid transit district or the amount of taxes to service such bonds, other than those limitations provided in the Special Assessment Investigation, Limitation and Majority Protest Act of 1931.

We have contacted the nine counties mentioned in the San Francisco Bay Area Metropolitan Rapid Transit District Act (Calif. Stats. 1949, ch. 1239) and have been advised by those who answered that their respective charter provisions would not conflict with district-type legislation authorizing the issuance of bonds and the imposition of taxes to maintain and operate the facilities of the district and to meet bond requirements. The constitutional debt limit (Calif. Const., article XVI, sec.1) does not apply to public utility districts created pursuant to State law (cf., Pattison v. Board of Supervisors, 13 Cal. 175, 183-189; California Toll Bridge Authority v. Wentworth, 212 Cal. 298, 308; 20 Ops. Cal. Atty. Gen. 95). Other than noted hereinbelow, there does not appear to be any existing State law which would limit the amount and terms of the bonds which might be issued by a rapid transit district or the amount of taxes to service such bonds. Of course, certain limitations might be included in the statute authorizing the formation of the district. In 20 Ops. Cal. Atty. Gen. 95, this office concluded that while a county water district may lawfully incur a debt which is not subject to constitutional debt limit (Calif. Const., art. XVI, sec.1), nevertheless it is probable that the Special Assessment Investigation, Limitation and Majority Protest Act of 1931 (Sts. & Hy. Code secs. 2800-3012) would apply. The debt limitations under that statute are set forth in sections 2900-2905 of the Streets and Highways Code. The aforementioned opinion (20 Ops. Cal. Atty. Gen. 95) is applicable here. However, the statute authorizing the creation of a rapid transit district could provide for the exclusion of the district from the operation of the Special Assessment Investigation, Limitation and Majority Protest Act of 1931.

- 3 (b). Can the financial burdens of the transit system be allocated to cities or counties within the district on a differential basis specified in the district statute, without separate vote of the communities affected?

This question is answered in the affirmative.

The Legislature, in establishing a special district, may provide for an allocation of costs among the political subdivisions comprising the district in a manner producing differing tax rates in these political subdivisions if the allocation is reasonable. An example of allocation of tax burdens on a differential basis is found in section 24370.1 of the Health and Safety Code relating to the Bay Area Air Pollution Control District. Section 24370.1 provides as follows:

"Before the fifteenth day of June of each year the board shall estimate and determine the amount of money required by the district for purposes of the district during the ensuing fiscal year and shall apportion this amount to the counties included within the district, one-half according to the relative value of the real estate of each county within the district as determined by the board and one-half in the proportion that the population of each county bears to the total population of the district. For the purposes of this section the board shall base its determination of the population of the several counties on the latest official information available to it. The total amount of money required by the district for district purposes during any one fiscal year shall not exceed one cent (\$0.01) on each one hundred dollars (\$100) of the assessed valuation of all the property included within the district."

It is provided in section 24350.2 of the Health and Safety Code, that the Bay Area Air Pollution District is to transact business and exercise its powers and functions in the counties of Alameda, Contra Costa, Marin, San Francisco, San Mateo and Santa Clara on the effective date of the enactment of the Bay Area Air Pollution Law without any vote or resolution by such counties on the matter. There is also a provision for the exercise of the functions of the district in one or more additional counties designated in the statute upon the filing of a petition by ten per cent of the qualified electors of the county which is acted upon favorably by the board of supervisors of the county (Health & Saf. Code secs. 24350.3 et seq.)

Moreover, the allocation of the tax burden of a Joint Highway District between Alameda County and Contra Costa County on the basis of the payment by Alameda County of 90% of the costs and the payment by Contra Costa County of 10% of the costs was upheld in Joint Highway District No. 13 v. Hinman, 220 Cal. 578. In the Hinman case, it was contended that the allocation of costs between the two counties was violative of constitutional provisions because the levy was not spread over the entire district at a uniform rate. The court recognized that the tax rate would not be the same in each county. After reviewing the

decision of the United States Supreme Court in Foster v. Pryor, 189 U. S. 325, and decisions in other jurisdictions, the court held as follows:

"We are of the view that the Joint Highway District Act does not violate the due process provision of the federal Constitution in providing for the organization of the District and the method of levying and collecting the tax. The legislature had full power over the subject matter of the formation of the District. It delegated this power to the boards of supervisors of the respective counties comprising the District. The construction of the proposed highway is a matter in which the whole community has an interest, and is a typical public purpose for which property may be taxed by the state. Questions relating to spreading the tax are matters which rest in the discretion of the state, and are not controlled by either the due process or the equal protection clause of the fourteenth amendment. (Memphis etc. Ry. Co. v. Pace, 282 U. S. 241 [51 Sup. Ct. 108, 75 L. Ed. 315, 72 A. L. R. 1096] .) If the tax can at any time be shown to be palpably arbitrary, thereby amounting to a clear abuse of power, it will fall under the condemnation of the due process clause. Where the difference between the different portions of territory is plain and palpable, the right of the legislature to recognize that difference and to provide for a difference in taxation cannot be denied without imposing restraints upon the constitutional power of the legislature, which cannot in reason be justified. Whether there is such a difference would generally be for the legislature to determine, although it cannot be said that the courts could not, in any possible state of facts, review that determination. (Foster v. Pryor. supra, at p. 334.)"

It is apparent from the decision in Joint Highway District No. 13 v. Hinman, supra, that the Legislature has considerable leeway in allocating costs among the various political subdivisions constituting the district, providing there is some reasonable basis for such differentiation in the tax rates. In like manner, a difference in the tax rate imposed by the rapid transit district in the cities or counties composing the district would be upheld if it were not palpably arbitrary.

* * * * *

A P P E N D I X I I

Table A

CONSTRUCTION COST ESTIMATE--OPTIMUM PLAN
FIRST-STAGE SYSTEM

Route	Track and Structure	Stations	Yards and Shops	Electrification	Signals and Dispatch	Right-of Way	Fees and Charges	Contin-gencies	Total
San Francisco Terminal	\$ 37,002,795	\$ 9,616,050		\$ 1,703,400	\$ 865,900	\$ 3,466,300	\$ 4,919,000	\$ 5,265,000	\$ 62,838,445
Transbay Crossing	55,949,850			2,052,500	861,500	2,060,000	5,886,000	6,092,000	72,901,850
Oakland Terminal	43,801,380	12,237,200		3,176,500	1,945,900	2,537,000	6,116,000	6,370,000	76,183,980
Richmond-Decoto Route									
Seg. 1 Richmond to Alameda Co. Line	9,086,540	2,622,400		3,625,750	1,128,970	3,520,200	1,646,400	1,998,400	23,628,660
2 Alameda Co. Line to Oakland T.	15,961,140	6,233,975		4,886,500	2,041,500	8,728,500	2,913,000	3,786,000	44,550,615
3 Oakland T. to Decoto	24,570,900	6,617,100		10,808,800	4,260,700	9,327,900	4,626,000	5,559,000	65,770,400
Subtotal	\$49,618,580	\$15,473,475		\$19,321,050	\$ 7,431,170	\$21,576,600	\$ 9,185,400	\$11,343,400	\$133,949,675
Oakland-Concord Route									
Seg. 1 Oakland T. to Tunnel	10,016,555	1,523,025		1,822,650	583,020	879,000	1,395,000	1,482,000	17,701,250
2 Tunnel	17,626,500			774,100	668,800	616,900	1,906,900	1,968,600	23,361,800
3 Tunnel to Walnut Creek	14,538,880	4,407,225		4,284,800	2,036,100	699,000	2,526,700	2,596,600	31,089,305
4 Walnut Cr. to Concord	5,382,400	1,793,675		3,702,000	1,591,400	347,300	1,246,900	1,281,700	15,345,375
Subtotal	\$47,564,335	\$ 7,723,925		\$10,583,550	\$ 4,879,320	\$ 2,542,200	\$ 7,075,500	\$ 7,328,900	\$ 87,697,730
Peninsula Route									
Seg. 1 S.F.T. to County Line	16,664,135	2,480,150		3,782,700	1,249,100	5,490,300	2,418,000	2,967,000	35,051,385
2 County Line to Burlingame	12,165,865	3,332,650		6,869,300	3,032,100	2,867,500	2,540,000	2,826,700	33,634,115
3 Burlingame to S.C. Co. Line	25,390,433	8,331,050		8,539,550	3,278,500	1,459,700	4,554,000	4,699,900	56,253,133
4 S.C. Co. Line to Arastradero	2,773,473	1,967,875		2,816,650	1,281,600	1,173,500	884,000	1,001,300	11,898,398
Subtotal	\$56,993,906	\$16,111,725		\$22,008,200	\$ 8,841,300	\$10,991,000	\$10,396,000	\$11,494,900	\$136,837,031
Yards and Shops			\$18,072,000			479,700	1,807,000	1,855,000	22,213,700
Subtotal			\$18,072,000						\$592,622,411
Rolling Stock									89,360,600
First Stage Total	\$290,930,846	\$61,162,375	\$18,072,000	\$58,845,200	\$24,825,090	\$43,652,800	\$45,384,900	\$49,749,200	\$681,983,011
Marin County Route									
Seg. 1 S.F.T. to G.G. Bridge	21,498,900	6,850,000		2,500,000	1,125,000	2,080,000	3,197,000	3,405,000	40,655,900
2 G.G. Bridge	12,000,000			1,040,000	411,000		1,345,000	1,345,000	16,141,000
3 G.G. Bridge to St. V.	28,844,500	6,800,000		9,250,000	3,740,000	5,481,000	4,863,000	5,412,000	64,390,500
Yards and Shops			2,013,600			50,000	201,000	206,000	2,470,600
Subtotal									\$123,658,000
Rolling Stock									12,843,100
Marin County Total	\$ 62,343,400	\$13,650,000	\$ 2,013,600	\$12,790,000	\$ 5,276,000	\$ 7,611,000	\$ 9,606,000	\$10,368,000	\$136,501,100
Grand Total	\$353,274,246	\$74,812,375	\$20,085,600	\$71,635,200	\$30,101,090	\$51,263,800	\$54,990,900	\$60,117,200	\$818,484,111

Source: Parsons, Brinckerhoff, Hall and MacDonald--Engineers--New York.

Table B

CONSTRUCTION COST ESTIMATE--MINIMUM PLAN
FIRST-STAGE SYSTEM

Route	Track and Structure	Stations	Yards and Shops	Electrification	Signals and Dispatch	Right-of Way	Fees and Charges	Contingencies	Total
San Francisco Terminal	\$ 10,467,360	\$ 5,164,150		\$ 1,972,650	\$ 863,400	\$ 4,607,300	\$ 1,847,000	\$ 2,308,000	\$ 27,229,860
Transbay Crossing	1,230,000			2,470,150	1,004,300	-	470,000	470,000	5,644,450
Oakland Terminal	20,442,660	6,010,275		3,743,400	3,323,100	13,545,700	3,352,000	4,706,000	55,123,135
Richmond-Decoto Route									
Seg. 1 Richmond to Alameda Co. Line	9,086,540	2,622,400		3,625,750	1,128,970	3,520,200	1,646,400	1,998,400	23,628,660
2 Alameda Co. Line to Oakland T.	16,007,280	6,233,975		4,127,380	1,913,500	8,251,800	2,828,200	3,653,900	43,015,535
3 Oakland T. to Decoto	23,814,440	6,619,425		10,883,800	3,814,620	8,190,900	4,513,200	5,332,300	63,168,385
Subtotal	\$ 48,908,260	\$15,475,800		\$18,636,930	\$ 6,857,090	\$19,962,900	\$ 8,987,800	\$10,984,100	\$129,812,880
Oakland-Concord Route									
Seg. 1 Oakland T. to Tunnel	10,016,535	1,523,025		1,822,650	583,020	379,000	1,395,000	1,432,000	17,151,230
2 Tunnel	17,626,500			774,100	668,200	616,900	1,907,000	1,969,000	23,561,700
3 Tunnel to Walnut Creek	14,538,880	4,407,225		4,284,800	2,036,100	699,000	2,526,700	2,596,600	31,089,305
4 Walnut Cr. to Concord	5,382,400	1,793,675		3,702,000	1,591,400	347,300	1,246,900	1,281,700	15,345,375
Subtotal	\$ 47,564,315	\$ 7,723,925		\$10,583,550	\$ 4,878,720	\$ 2,042,200	\$ 7,075,600	\$ 7,279,300	\$ 87,147,610
Peninsula Route									
Seg. 1 S.F.T. to County Line	16,536,825	2,480,150		3,782,700	1,249,100	5,490,300	2,405,000	2,954,000	34,898,075
2 County Line to Burlingame	12,165,865	3,332,650		6,869,300	3,032,100	2,867,500	2,540,000	2,826,700	33,634,115
3 Burlingame to S.C. Co. Line	25,390,433	8,331,050		8,539,550	3,278,500	1,459,700	4,554,000	4,699,900	56,253,133
4 S.C. Co. Line to Arastradero	2,773,473	1,967,875		2,816,650	1,281,600	1,173,500	884,000	1,001,300	11,898,398
Subtotal	\$ 56,866,596	\$16,111,725		\$22,008,200	\$ 8,841,300	\$10,991,000	\$10,383,000	\$11,481,900	\$136,683,721
Yards and Shops			\$18,072,000				1,807,000	1,807,000	21,686,000
Subtotal			\$18,072,000						\$463,327,656
Rolling Stock									89,360,600
First Stage Total	\$185,479,191	\$50,485,875	\$18,072,000	\$59,414,880	\$25,767,910	\$51,149,100	\$33,922,400	\$39,036,300	\$552,688,256
Marin County Route									
Seg. 1 S.F.T. to G.G. Bridge	21,498,900	5,836,700		2,500,000	1,125,000	2,080,000	3,096,000	3,304,000	39,440,600
2 G.G. Bridge	12,000,000			1,040,000	411,000		1,345,000	1,345,000	16,141,000
3 G.G. Bridge to St. V.	28,844,500	6,800,000		9,250,000	3,740,000	5,481,000	4,863,000	5,412,000	64,390,500
Yards and Shops			2,013,600			50,000	201,000	206,000	2,470,600
Subtotal									\$122,442,700
Rolling Stock									12,843,100
Marin County Total	\$62,343,400	\$12,636,700	\$2,013,600	\$12,790,000	\$5,276,000	\$7,611,000	\$9,505,000	\$10,267,000	\$135,285,800
Grand Total	\$247,822,591	\$63,122,575	\$20,085,600	\$72,204,880	\$31,043,910	\$58,760,100	\$43,427,400	\$49,303,300	\$687,974,056

Source: Parsons, Brinckerhoff, Hall and MacDonald--Engineers--New York.

Table C

MAJOR FEATURES OF AUTHORITY-TYPE RAPID TRANSIT ORGANIZATIONS
FOR METROPOLITAN AREAS

	Los Angeles	Boston	Chicago	Pittsburgh ^{1/}	Delaware River Port
<u>IDENTIFICATION</u>					
Name of Organization	L. A. Metropolitan Transit Authority	Metropolitan Transit Authority	Chicago Transit Authority	Transportation Authority of _____ County	Delaware River Port Authority of Pennsylvania and New Jersey
Title and Date of Legislation	Assembly Bill No. 3112, 1951	Acts of 1947 (Chap. 544) as amended	Metropolitan Transit Authority Act, 1945	Second Class County Transportation Authority Act	Port Authority Compact, New Jersey and Pennsylvania, 1951; concurrence of U. S. Congress, July 17, 1952
Principal Operating Units	San Fernando Valley and strip 4 miles each side of L. A. River main channel to Long Beach	Boston and 13 other cities	Chicago and most of Cook County (85 municipalities)	Single county but may extend into adjoining counties under certain conditions. Service area to be determined by the Authority	For rapid transit operations between Pennsylvania and New Jersey; all or part of 7 counties
Minimum Participation	Must include at least two municipalities or unincorporated areas	Not limited	One or more cities with aggregate population of at least 100,000	Single county	--
Legal Status	A public corporation considered in all respects a public utility	Body politic and corporate	Municipal corporation	Body politic and corporate	A bi-state public corporation
Principal Activity	An interurban rapid transit system carrying passengers, mail, and hand baggage	Transit; but also empowered to establish off-street parking	Acquire, construct, and operate a transportation system	Provide an integrated transportation system; may provide parking facilities in connection with its operations	Construct and operate bridges and associated railroads, port facilities, and rapid transit facilities
Type of Transit	Suspended overhead monorail	--	Not limited	Not limited	Rapid transit only is specified

^{1/} This is a proposed authority set forth by the Transit Authority Advisory Committee as of November 10, 1954 and considered by the Pennsylvania General Assembly as House Bill No. 179.

Table C (Continued)

	<u>Los Angeles</u>	<u>Boston</u>	<u>Chicago</u>	<u>Pittsburgh</u>	<u>Delaware River Port</u>
<u>GOVERNING BODY</u>					
Title	Authority	Board of Public Trustees	Chicago Transit Board	Board	Port Commission
Number of Members	7	3 (originally 5)	7	5	16
Method of Choice	By Governor	By Governor, with advice and consent of the Council	3 by Governor, with consent of Senate and approved by Mayor; 4 by Mayor, with consent of City Council	Appointed by County Commissioners	8 by Governor of New Jersey with consent of Senate; 6 by Governor of Pennsylvania; 2 ex-officio (Pennsylvania Auditor General and Treasurer)
Ultimate Terms and Arrangement Thereof	4 years; 3 commencing within 60 days, 4 commencing 2 years later, and so forth	6 years (originally 10 years); staggered at 2 year intervals	7 years, staggered	5 years, staggered after first election	5 years for appointed members, term of office, for Pennsylvania ex-officio members
Member Qualification	Residents and voters in County	Not more than 2 from same political party	Residents of metropolitan area, to be "of recognized business ability" (one of Governor's appointees living outside Chicago)	Residents and United States citizens	Resident voters
Remuneration	Expenses and \$20 per meeting; maximum of \$100 per month	\$6,000 for Trustees; \$7,500 for Chairman	\$15,000 (for initial Board) plus actual expenses	No remuneration, but reimbursement of expenses	Expenses only
Removal	--	Like "Method of Choice"	Like "Method of Choice," in case of incompetency, malfeasance, or neglect of duty	At will of appointing power	In Pennsylvania at will of appointing power
Quorum for Transacting Business	Majority	Majority (2) for meetings and for action	4 members for meetings and for action; 5 members to authorize expenditures for operating and maintenance in excess of budget or emergency purchases in excess of \$2,500.	3 members	Majority of members from each state

Table C (Continued)

	<u>Los Angeles</u>	<u>Boston</u>	<u>Chicago</u>	<u>Pittsburgh</u>	<u>Delaware River Port</u>
<u>GOVERNING BODY</u>					
(Continued)					
Officers Chosen by Governing Body:					
Chairman	Chosen by Authority from its membership	Member appointed by Governor	To be full time with larger salary than other members (\$35,000) and a 3-year term	Yes	Yes (member)
Vice-Chairman	--	One or more Vice-Presidents, not necessarily members	--	Yes	Provided (member)
Secretary	May be member of Authority	--	Need not be member, but is a full-time officer	Need not be member of Board	Need not be member but is part of full-time staff
Treasurer	Full time; not a member of Authority	Not necessarily a member	Need not be a member	Need not be member of Board	Need not be a member
Other	Chosen by Authority	Clerk (may be combined with Treasurer)	--	--	--
Meetings	--	--	At least monthly	At least monthly	Monthly
Special Powers of Chairman	--	--	Veto, requiring 5-member vote to override	--	--
<u>MANAGEMENT AND OTHER OFFICERS</u>					
Chief Executive	General Manager	General Manager	General Manager (may be chosen by Board)	General Manager	Executive Director

Table C (Continued)

	Los Angeles	Boston	Chicago	Pittsburgh	Delaware River Port
MANAGEMENT AND OTHER OFFICERS (Continued)					
Qualifica- tions	Recognized ability and experience	--	Recognized ability and experience in operation of transportation sys- tems	Recognized experience and ability in transportation	--
Salary or Other Re- muneration	Not fixed in Act	\$27,500	\$32,500 ^{1/}	--	\$25,000
Counsel and His Salary	General Attorney	General Counsel (\$20,000)	General Attorney (\$18,000) ^{1/}	Attorneys	One may be hired for each state (\$17,500 each)
Chief Engineer	Provided	--	Provided (\$18,000) ^{1/}	--	Provided (\$13,000)
Auditor or Comptroller	Not provided	Treasurer-Comptroller (\$20,000)	--	--	Chief Accountant (\$8,800)
Consultants or Others	Authority may em- ploy fiscal agent or adviser to assist in sale and distribution of bonds	--	--	Engineers, consultants, etc.	At discretion of Authority
Other Officers	--	General Attorney (\$20,000) handles damages, etc.	Board shall provide for appointment	Appointed by Board, which also determines duties and salaries	--

^{1/} These salaries not provided in Act.

Table C (Continued)

	Los Angeles	Boston	Chicago	Pittsburgh	Delaware River Port
<u>POWERS AND DUTIES</u>					
Life of Organization	Perpetual	--	--	Perpetual	Perpetual
Overriding Control	None, except as noted below	Subject to substantial control by Department of Public Utilities, as for borrowing	--	--	Governors must consent to acquisition of any rapid transit facility
Fare Policy	Must be fixed to give revenue equal to annual operating and maintenance expenses, including bond service	--	To provide for usual expenses and fixed charges, plus any compensation required to be paid to a municipality	Reasonable rates for the purpose of providing sufficient revenues at all times	Fixed by Commission to meet expenses, including interest and sinking fund charges, except that transit may be submarginal, subject to operation from pooled corporate surplus
Control of Rates or Fares	Public Utilities Commission reviews rates or rentals as well as covenants regarding rates	By trustees, subject to approval of Department of Public Utilities	By Board	By Authority	By Commission
Control of Service	Presumably by Public Utilities Commission	Character and extent determined by Trustees to meet cost of service, less interest charges on bonds and notes, and most payments of principal (otherwise subject to Department of Public Utilities, as are other street railway companies)	By Board	By Authority	By Commission
Change in Area	May not be made while bonds are outstanding	Admission of additional towns based on vote and subsequent legislation	--	Service area may be expanded	--

Table C (Continued)

	<u>Los Angeles</u>	<u>Boston</u>	<u>Chicago</u>	<u>Pittsburgh</u>	<u>Delaware River Port</u>
<u>POWERS AND DUTIES</u> (Continued)					
Other Restraints	Subject to regulations, restrictions, and restraints of a privately owned and operated public utility	Advisory Board reviews fares and service (but without authority), approving bond issues and presumably approving appointment of officers	--	Appeal to Court of Common Pleas on fares	None
Power to Acquire Existing Systems	Subject to authorization by Public Utilities Commission	Provided under special conditions	Specifically provided, local bus operations excluded unless rights secured from municipality	By purchase or condemnation	Provided, subject to prohibition against competition with existing private enterprise
Lease of Facilities	Subject to authorization by Public Utilities Commission	--	May lease municipally owned facilities; municipalities by special provision can lease from the Authority	Provided	Provided
Eminent Domain	Within the County, subject to consent of public agency or private utility whose property is involved	Per Chapter 79 of General Laws, but with respect to other lines this power is limited by procedures of Sect. 10 A-C	Does not include acquisition of utility operating facilities beyond metropolitan area	Provided	Covered within port district, by special article on condemnation proceedings; requires consent of state when municipality involved
Power to Make Studies	Actual study made by Coverdale and Colpitts, Gibbs and Hill, and Ruscardon Engineers	Obligation to report to General Court on proposed extensions and requirements	Board may do so and may hold hearings	Initial studies financed by counties of second class	Provided

Table C (Continued)

	Los Angeles	Boston	Chicago	Pittsburgh	Delaware River Port
<u>POWERS AND DUTIES</u> (Continued)					
Tax Status	Exempt	Exempt from state taxes, assessments, licenses, etc., except vehicle taxes and license fees and fuel taxes	Exempt in all respects from state taxation per Revenue Act of 1939 (as municipal corporation) ^{1/}	Exempt from state taxation, local taxes, bridge tolls or other fees	Free from taxes or assessments
Payment in Lieu of Taxes	Pays to appropriate public corporations amounts equivalent to taxes it would pay as privately owned utility; valuation by State Board of Equalization	--	Payments include: 3 percent of gross revenues, to the extent earned, after prior charges; this is for use of streets and goes into City Transit Fund (license fees paid are a credit)	--	Provided at option of Port Commission
Disposal of Property	For rights, interests, or other property not required; subject to Public Utilities Commission approval	Trustees so empowered	Power available	Power available	Commission so empowered
Payment of Costs of Utility Removal or Relocation	--	--	By agreement between Authority and other party	--	Under jurisdiction of respective state Public Utilities Commissions
Contracting for Services	Subject to Public Utilities Commission regulations	--	Provides for joint use of facilities	Granted	Use of property by others possible under contract or franchise; see covenant under MISCELLANEOUS

^{1/} However, CTA pays fuel tax (state) and revenue tax on power (3 percent to state and 4 percent to city), also license fees to city.

Table C (Continued)

	Los Angeles	Boston	Chicago	Pittsburgh	Delaware River Port
<u>POWERS AND DUTIES</u> (Continued)					
Purchasing Policy	--	--	Purchases of over \$2,500 on a bid basis, except in emergency or special cases when authorized by vote of 5 Board members	Purchases of over \$1,000 on advertisement and bids to lowest responsible bidder	All purchases over \$1,000 must be approved by Authority, and generally on bid basis
Special Relationship to Municipalities	--	None except relating to takeover of city built facilities	City Ordinance grants 50-year franchise to CTA, which agrees to proceed with list of improvements; also includes provisions relating to use of city-owned subway facilities; universal transfer prescribed	Authority to have right to use streets and highways without consent of municipalities except where rails or overhead construction is involved	--
<u>ISSUANCE OF BONDS</u>					
Principal Amount	Not limited	As authorized by legislation	Not limited	Not limited	Apparently not limited, except as indicated below
Maximum Interest	6 percent	For issues mentioned below, interest is fixed with approval of Department of Public Utilities	5 percent per annum, payable semiannually	6 percent per annum, payable semiannually	--
Maximum Life	50 years	50 years for takeover bonds; 75 years for miscellaneous bonds	40 years	40 years	--
Type of Maturity	Serial or term	Sinking fund or serial	--	--	--
Security	Specifically <u>not</u> an obligation of city, county, or state	General obligation of District, with collection responsibility assumed by State	Not an indebtedness of the Authority, State, or of any other political entity; bonds are a claim against revenue, however	Bond holders rights stipulated in Act	May not pledge credit of state or of any municipality

Table C (Continued)

	Los Angeles	Boston	Chicago	Pittsburgh	Delaware River Port
ISSUANCE OF BONDS (Continued)					
How Authorized	By Authority	By acts of legisla- ture; also subject to approval of Department of Public Utilities for future issues	By Board	By Board	By Commission
Redemption or Prior Call	Not prior to fixed maturity date unless this right is ex- pressly stated	--	May be as provided in appropriate instruments	May be redeemable as de- termined by Board	As provided in bond indentures
How Sold	Public sale, sealed proposals	To Metropolitan Dis- trict, which is di- rected to purchase them, by terms of Act of 1947; Auth- ority reimburses District for its costs of bond issue and sale	By bid in public sale	To highest bidder in public sale; sealed bids	To highest bidder in public sale; sealed bids
Period During Which Inter- est is Pay- able Out of Proceeds	Construction period plus 2 years	--	--	--	--
Tax Status of Bonds	Exempt from taxation within state (ex- cept gift, inheri- tance, estate taxes)	Exempt from state taxes, when held by District	Exempt from federal in- come taxes (in opinion of Counsel)	Exempt from state taxation	Free from state and federal taxation
Legal Status	Action may be insti- tuted in Superior Court to determine right to issue bonds and their validity	--	--	--	--

Table C (Continued)

	<u>Los Angeles</u>	<u>Boston</u>	<u>Chicago</u>	<u>Pittsburgh</u>	<u>Delaware River Port</u>
<u>ISSUANCE OF</u> <u>BONDS</u> (Continued)					
Refunding of Bonds	Subject to same provisions as initial issue	Must be handled by District	At maturity under redemption provisions, before maturity with consent of holders; by its franchise ordinance city may provide an underwriter for refunding at lower interest rate	With consent of holders	As provided in bond indentures
Rights of Bondholders	--	--	--	By mandamus or other suit, action, or proceeding at law, or in equity	--
Equipment Financing	Special section of Act	Equipment bonds and notes limited to 10 million outstanding; life limited to life of equipment, but not more than 30 years; matching obligations of District	May be by equipment trust certificates, subject to limitation on amount issued	By equipment trust certificates	--
Investment Status	Subject to investigation and certification by State District Securities Commission which will determine eligibility as legal investments	--	Standard provision	Negotiable investments under laws of Pennsylvania	Standard provision
<u>OTHER FINANCIAL POWERS, REQUIREMENTS</u>					
Budgetary Procedure	--	--	Budget provided, to be adopted prior to first day of fiscal year	--	Budget on annual basis for Port Development Department only

Table C (Continued)

	Los Angeles	Boston	Chicago	Pittsburgh	Delaware River Port
<u>OTHER FINAN-</u> <u>CIAL POWERS,</u> <u>REQUIREMENTS</u> (Continued)					
Modernization Funds	--	No provisions; legis- lation necessary	Set up from renewal, equipment, or deprecia- tion funds; disbursed for extensions or betterments, as well as for purchase or redemp- tion of revenue bonds	--	--
Depreciation Policy	--	Not to include de- preciation or obso- lescence for rolling stock. In 1954, set aside \$1.2 million. (See 1954 Report, Note B, on Statement of Income and Ex- pense)	Provided for that de- preciation not offset by expenditures for maintenance, repairs, and replacements on age-life basis but not less than 8 percent of revenue	--	--
Claims and Damages	--	\$1.3 million for each year, 1953 and 1954	Payments made to damage reserve fund, or Auth- ority may reinsure. Claims must be filed within one year of accident	Client action must be commenced within 2 years and statement of cause filed within 6 months, with Authority	--
Other Borrowing Provided	Limited to obliga- tions payable out of revenues, in form of bonds, notes, debentures, interest-bearing certificates, etc.	Notes, in anticipation of bond money, shall be purchased by Dis- trict; other notes of Authority may be pur- chased by District and matched by its notes; borrowing requires approval of Department of Public Utilities if for more than 1 year	Not provided except in general terms	Any municipalities can make grants for defraying cost of operation	--

Table C (Continued)

	<u>Los Angeles</u>	<u>Boston</u>	<u>Chicago</u>	<u>Pittsburgh</u>	<u>Delaware River Port</u>
OTHER FINAN- CIAL POWERS, REQUIREMENTS (Continued)					
Investment of Funds	--	--	Permissible in own or other local municipal, state of Illinois or U. S. bonds	--	Obligations of U. S. Government only, as provided in bond reso- lution
Use of City- Owned Facilities	--	These have been taken over and paid for sub- stantially by issuance of bonds	Reimburse city for cost of transportation equipment in subway system, such as track, signals, etc. (CTA operates, maintains, and repairs them); pay- ment to Park District for wear and tear of boulevards	Power granted with consent of local authority and as agreed with these	--
Special Charges Borne	--	Rental of Cambridge Subway	a) Cost of snow- removal b) Payments to City of \$5,000 per single mile of track aban- doned c) Cost of alterations to elevated struc- ture as required by street improvements	--	Payments to states and to Phila- delphia on account of their con- tributions to cost of existing bridge. (Liquidated in 1931; no present payments to states or municipalities except for serv- ices--sewer, water, etc.)
Initial Funds	Appropriation by Board of Supervisors	--	--	By grants from counties of second class	--
Fixing of Salaries	By Authority	By Authority	By Board	By Board	By Authority

Table C (Continued)

	Los Angeles	Boston	Chicago	Pittsburgh	Delaware River Port
<u>MISCELLANEOUS</u>					
Other Covenants in Legislation	--	To secure adequate, coordinated, integrated and efficient system, and improvement thereof	--	--	Stated as intent of two legislatures to further the American system of free private enterprise and to promote mutual benefit of people of Pennsylvania and New Jersey
Personnel Policy	--	City employees taken over continue under existing retirement system; protect jobs of workers of other carriers taken over by Authority	The Board shall classify and adopt rules for appointment; all employees except executive and administrative must be taken over from an acquired utility; the Board shall establish a sound retirement and pension system	Full rights shall be granted to personnel employed as a result of acquisition of existing system; existing insurance and retirement benefits shall be continued	All employees members of Pennsylvania State Employees Retirement System (withholding)
Exclusive Franchise	--	--	Where provided by popular vote	Exclusive right to use streets for local service inside of service area	During life of outstanding bonds no other bridge to be allowed within 10 miles if built by anyone else
Attachment of Property	--	Property of Authority not subject to attachment	No lien on physical property may be created by trust agreement	--	--
Annual Report	--	To be made to Governor, legislature; and Trustees of Metropolitan District	To be filed with Governor, County Clerk of Cook County and clerk of any municipality adopting Act	Annual report shall be prepared by Board and filed at end of fiscal year with County Commissioners and municipalities and shall be published in two newspapers	Annual report to Governors and legislatures of Pennsylvania and New Jersey
Extensions of System	--	Department of Public Utilities may assist in acquisition of rights-of-way, licenses, etc. for approved extensions beyond existing municipalities; after public hearing plans are subject to approval by Department of Public Utilities	By Board anywhere within territory, but consent of municipalities is required for local services	May extend service area by filing plan with Recorder of Deeds of the Public Utilities Commission	--

Table C (Continued)

	Los Angeles	Boston	Chicago	Pittsburgh	Delaware River Port
MISCELLANEOUS (Continued)					
Auditing	--	By State Auditor	--	Annual report and financial statement shall be certified by an independent C. P. A.	By retained auditors
Special Reserves	--	\$2 million fund established from proceeds of initial bonds	Damage reserve fund to be created from charges to operating expenses and withdrawals from gross receipts; also such other special funds as may be found desirable by Board	--	--

Table D

MAJOR PROVISIONS OF DISTRICT-TYPE LEGISLATION IN CALIFORNIA
PERTAINING TO TRANSPORTATION

	Joint Highway District Act	Bridge and Highway District Act	Transportation District Act	Transit District Law
<u>IDENTIFICATION</u>				
Name of Organization	Joint Highway District No. _____ of the State of California	_____ Bridge and Highway District	Transportation District	Transit District
Title and Date of Legislation	Statutes of 1943, Chap. 284	Statutes of 1943, Chap. 286	Statutes of 1939, Chap. 1109	Transit District Law, Chap. 1036, Statutes of 1955
Principal Operating Units	--	Golden Gate B. & H. District	--	Alameda and Contra Costa Counties
Minimum Participation	2 or more counties	1 or more contiguous counties	2 municipalities within 1 county	Any city, together with unincorporated territory, or any two or more cities
Legal Status	--	--	A separate and independent political corporate entity	Public corporation
Principal Activity	Improvement of public high- ways including requisition of rights-of-way, laying out, construction, improve- ment, and maintenance; tunnels also included	Construct, maintain, improve and operate bridges, abutments, rights- of-way, roads, tunnels, railroads, streetcar lines, interurban lines, telephone and telegraph lines, foot- paths, viaducts, tollgates, toll- houses, subways, and other forms of property	Facilities necessary for providing transportation for persons and property, including off-street park- ing; concerns highways and freeways but does not mention transit	Transportation of passen- gers and incidental baggage
<u>GOVERNING BODY</u>				
Title	Board of Directors	Board of Directors	Board of Directors	Board of Directors
Number of Members	1 per county (from members of Boards of Supervisors)	County of 75,000-----1 County of 75,000-500,000-----2 County over 500,000 a number equal to number of directors for all counties in district of under 500,000 population	1 per municipality	7 (1 from each of 5 wards, 2 at large)

Table D (Continued)

GOVERNING BODY (Continued)	Joint Highway District Act	Bridge and Highway District Act	Transportation District Act	Transit District Law
Method of Choice	Appointed by Board of Supervisors for each county, one appointed by Director of Public Works	Appointed by Board of Supervisors for each county	Appointed by Chief Executive Officer of municipality, with consent of governing body	Elected by voters of each ward and by all together
Ultimate Term	Indefinite--governed by appointing power	4 years	--	4 years
Arrangement of Terms	Dependent on appointment	Staggered by designation that part of initial Board serve for 2 years only	Dependent on appointment	Staggered at first election--3 by wards and 1 at large for 4 years, remaining 3 for 2 years
Member Qualification	Member of County Board of Supervisors	--	--	Voters and residents of wards and district
Remuneration	No compensation other than expenses incurred while performing their duties	\$25 per meeting, plus traveling expenses in performance of duties; no more than 4 meetings per month will be paid for	No compensation	\$20 for each meeting, no more than \$100 per month; allowed travel and justifiable expense as authorized by Board
Removal	--	For cause by the Board of Supervisors	By recall	By recall of voters according to usual procedure and for usual grounds
Quorum for Transacting Business	Majority	Majority	At least 50 percent of qualified votes represented	3/5 for ordinances, resolutions, or motions
Voting Strength in Board	Presumably 1 per member	Presumably 1 per member	1 per \$200 million valuation of municipality, but voting must be as unit	1 per member
Delegation of Powers	--	--	Only executive, administrative, and ministerial powers	Implied (specific for General Manager)

Table D (Continued)

	<u>Joint Highway District Act</u>	<u>Bridge and Highway District Act</u>	<u>Transportation District Act</u>	<u>Transit District Law</u>
<u>GOVERNING BODY</u> (Continued)				
Additional Members of Board	If an even number of counties exists, an additional member will be appointed by the board	None	--	--
Effective Date of Actions	30 days after adoption	Within 2 weeks	30 days after adoption	--
Limiting Influence of Large City	--	--	No municipality shall have majority of votes	--
Officers Chosen from Governing Body, by Board:				
Chairman	President	President	For 2-year period	President
Vice-Chairman	Vice-President	--	For 2-year period	Vice-President
Secretary	Secretary	Secretary (not a member)	--	Secretary
Treasurer	See "Other Officers"	See "Other Officers"	Not necessarily a member	Treasurer
Attorney	See "Other Officers"	See "Other Officers"	--	Attorney
Accountant	See "Other Officers"	See "Other Officers"	--	Accountant
<u>MANAGEMENT</u>				
Chief Executive	District Engineer is presumably in charge	General Manager (appointed by board)	Probably to be provided in permanent organization	General Manager
Qualifications	Qualified Civil Engineer licensed by State	May not be a Director	--	Experience in the construction or management of transit facilities

Table D (Continued)

	<u>Joint Highway District Act</u>	<u>Bridge and Highway District Act</u>	<u>Transportation District Act</u>	<u>Transit District Law</u>
<u>MANAGEMENT</u> (Continued)				
Salary or Other Remuneration	Fixed by Board, no officer or any county shall receive compensation for services rendered to the district	Fixed by Board	--	Salary fixed by Board
Other Officers and Their Appointment	--	Employed and discharged by General Manager	--	--
Counsel	--	Attorney and subordinate officers not appointed by General Manager are appointed by Board	--	See Attorney, above
Chief Engineer	District Engineer	--	--	--
Auditor or Comp- troller	--	Auditor	Position may be created by Board	See Accountant, above
Consultants	--	--	--	--
Others	Treasurer and Ass't Secretary (optional) or others as needed	--	--	--
Office Location	As fixed by Board	As fixed by Board	To be fixed by Board	--
<u>POWERS AND DUTIES</u>				
Life of Organization	Until projects for which organized are completed or terminated	--	Perpetual succession when voted as permanent organization	Perpetual succession
Control of Rates	--	Fixed by Board	--	Fixed by Board
Change in Area	--	See section on "Annexation"	Area unlimited	By annexation

Table D (Continued)

	Joint Highway District Act	Bridge and Highway District Act	Transportation District Act	Transit District Law
<u>POWERS AND DUTIES</u> (Continued)				
Eminent Domain	Provided resolution is adopted describing lands or rights-of-way involved	District has the right to condemn any property necessary for construction of bridges, approaches, or highways	Possible with powers and privileges of municipal corporation	All rights, powers, and privileges of an incorporated city shall proceed in name of district
Power to Acquire Existing System	May acquire such facilities as necessary for the exercise of powers granted	May acquire existing facilities of various types mentioned above opposite "Principal Activity"	--	By condemnation of private property for public use
Power to Make Studies	Board of Directors has power to make all preliminary surveys as required	District may use funds coming from taxes for investigation purposes	Chief purpose of initial district	From time to time contract for or employ any professional service required
Cooperation with Other Organizations	Cooperates with state and federal governments	May cooperate with city, county, other district, or state in carrying out construction, repair, or relocation	Particularly the state	May cooperate with other organizations and accept cooperation
Tax Status	Presumably exempt	Presumably exempt	--	Presumably exempt
Disposal of Property	--	May dispose of any property	Possible	The Board may dispose of property according to its judgment
Access of Rights-of-Way	Board requests Board of Supervisors to condemn and acquire property or rights-of-way within counties involved	Cities and counties shall cooperate with Board and grant rights-of-way	--	May incur indebtedness for acquiring rights-of-way without specific approval
Payment of Costs of Utility Removal or Relocation	--	District shall pay such expenses	District requirements are paid directly by member municipalities	--

Table D (Continued)

	Joint Highway District Act	Bridge and Highway District Act	Transportation District Act	Transit District Law
<u>POWERS AND DUTIES</u> (Continued)				
Contract Procedures	All construction contracts awarded to lowest bidder as decided by Board of Directors	If expenditures exceed \$2,000, district advertises for bids	Fully prescribed	Provided
Contracting for Services	--	--	--	May lease or contract for any operation by outside agency
<u>ISSUANCE OF BONDS</u>				
Type of Bond	General obligation	General obligation	--	--
Principal Amount	Not to exceed 10 percent of assessed valuation; in counties with valuation of \$100 million or less, 3 percent; when more than \$100 million, 2 percent	Not to exceed 15 percent of assessed valuation	No provision; funds supplied directly by municipalities	Total indebtedness not to exceed 20 percent of assessed value of all real and personal property in the district
Maximum Interest	6 percent	6 percent	--	--
Maximum Life	15 annual installments	Not exceeding 40 years	--	50 years
Type of Maturity	--	--	--	Shall mature serially; payments shall begin in no more than 10 years and be completed in no more than 50 years
How Authorized	By election, requiring 2/3 of votes	By election, requiring 2/3 of votes	--	By approval of 2/3 of voters at special or general election

Table D (Continued)

	<u>Joint Highway District Act</u>	<u>Bridge and Highway District Act</u>	<u>Transportation District Act</u>	<u>Transit District Law</u>
<u>ISSUANCE OF BONDS</u> (Continued)				
Redemption	--	--	--	As determined by Board
Prior Call	--	--	--	Par value plus premium not exceeding 5 percent of principal amount
How Sold	--	--	--	By sealed bids to highest bidder
Period During Which Interest is Payable Out of Proceeds	--	--	--	Period of acquisition, construction, etc. but not exceeding 5 years
Legal Status	Legal investments, provision for purchase by state and counties	Legal investments	--	Legal investments
Priority of Bond Service Charges	--	None specified	--	--
Refunding of Bonds	Not possible	By Board resolution, if favorably voted by 2/3 majority	--	By Board resolution with a 2/3 vote, interest rate not exceeding that of re- funded bonds, payment to begin not later than 1 year and to be completed within 40 years
<u>TAXING POWER</u>				
Limitation	--	Limit of 10¢ per \$100 to pay for investigations of project; no taxes shall be levied for carrying out new projects until completion of original project for which district was formed	District does not tax directly but apportions costs of project to the member municipalities; amount is limited to 1¢ per \$100 (unless by consent of the governing body of the municipality) and is paid immediately or in installments	Only to be used if, in opinion of Board, rev- enues will not be suf- ficient for any and all lawful purposes

Table D (Continued)

	<u>Joint Highway District Act</u>	<u>Bridge and Highway District Act</u>	<u>Transportation District Act</u>	<u>Transit District Law</u>
<u>TAXING POWER</u> (Continued)				
Purpose of Taxing	A levy is made upon the counties in the district for payment of expenses of acquisitions of property or rights-of-way or projects undertaken by the district	Paying running, organization, and investigation expenses of the district before the issuance of bonds, and for paying obligations of the district	--	Any lawful purpose
Taxing to Meet Bond Service	--	Provided for by implication	--	Possible, in addition to all other taxes
Timing of Tax Levies	Same as other county taxes; 1/5 amount of levy must be paid within 90 days	During July of each year the Board shall determine amount of money needed and fix a tax rate; tax shall be collected in the same manner as county taxes are collected	Municipalities may assist to meet installments of project	At the time of fixing general tax levy
Expense of Collecting-- Counties	--	--	--	Shall be paid by agreement between County Board of Supervisors and Board-- no more than 1 percent of all money collected
<u>OTHER FINANCIAL POWERS, REQUIREMENTS</u>				
Other Borrowing Provided	Revenue bonds provided, secured by anticipated unpaid installments of county contributions. Special funding bonds also provided	May borrow in anticipation of taxes or revenues due in same or succeeding fiscal year	--	District may borrow and incur indebtedness not exceeding its annual income and revenue, without approval by 2/3 vote
Use of State Subventions	Counties may use allocation of state highway funds for payments to district as their share of project cost; such funds may also be used for county contribution to contingent fund	--	--	District may accept, without limitation, contributions or loans from U. S. and related agencies

Table D (Continued)

	Joint Highway District Act	Bridge and Highway District Act	Transportation District Act	Transit District Law
<u>OTHER FINANCIAL POWERS, REQUIREMENTS</u> (Continued)				
Fixing of Fares or Rates	--	Tolls shall be such as to provide for payment of operating expenses, repairs and depreciation, and any indebtedness	Fixed by district (Board of Directors)	By Board; shall be reasonable
Investment of Funds	--	Reserve fund may be invested in legal investment securities	--	--
Claims and Damages	--	The district shall pay the necessary expenses of any intersection and damages caused by construction of the works of district	--	State claim statutes apply-- 90 day filing, etc.
Handling of Deficits	--	Emergency borrowing possible	--	Through levy of tax
Special Reserves or Funds	Construction fund covers all money applicable to project; contingent fund covers money received from counties, according to suggested schedule, for organization and other preliminary expenses and for highway projects	Special fund or funds for indebtedness prior to retirement of works; also a special fund or funds for indebtedness after retirement of works and an emergency fund for use in the event of disaster, etc.	Contingent fund	--
Fixing of Salaries	By Board	By Board	By Board	By Board
<u>CONSTITUTING OF DISTRICT</u>				
Initiating Organization	Board of Supervisors in any county, by resolution	Board of Supervisors in any county	Initiative of one municipality and other proposed member municipalities acting through their legislative bodies	Resolution passed by half or more of the legislative bodies of cities to be included, asking Board of Supervisors of county to call an election; alternatively, a petition to Board of Supervisors by at least 10 percent of voters

Table D (Continued)

CONSTITUTING OF DISTRICT (Continued)	Joint Highway District Act	Bridge and Highway District Act	Transportation District Act	Transit District Law
Source of Preliminary and Organization Expenses	From construction and con- tingent funds; Boards of Supervisors may contribute to fund from moneys received from state taxes on motor vehicle licenses or fuels	Taxation, not to exceed 10¢ per \$100 for project investigations	Each municipality shall pay such amount apportioned as its share of the preliminary cost and expenses of the incorporation and organization of such district	From taxes as with neces- sary expenses during operation
Vote of Electors	Not necessary; vote of each Board of Supervisors only	Votes by registered voters of the county to be included	For setting up permanent organization only; majority required in each municipality to be included, and assessed valuation in approving municipalities must not be less than 2/3 of valuation within district as originally proposed	Majority vote determines membership of cities or unincorporated areas; registered votes of these areas must be at least 2/3 of total in proposed district
Terms of Late Entry	--	Board shall prescribe terms upon admission, including payment of a portion of organization and pre- liminary expenses originally in- curred by district	--	Must assume their share, but only on current charges
Procedure for Petitioning	--	Electors apparently may petition for the formation of the district	--	Legislative body of city may petition
Validity of Incor- poration or Annexation	--	Incontestable unless action is brought within 3 months after com- pletion of proceedings	--	Incontestable unless action is brought with- in 3 months after com- pletion of proceedings
Exclusion of Area	--	Any territory failing to submit ordinance of intention within a time limit will be excluded from district	--	Any territory not being served or included with- in boundaries of incor- porated city, and not benefited in any manner by District, may be excluded

Table D (Continued)

	<u>Joint Highway District Act</u>	<u>Bridge and Highway District Act</u>	<u>Transportation District Act</u>	<u>Transit District Law</u>
<u>CONSTITUTING OF DISTRICT</u> (Continued)				
Annexations	--	By request of Board of Supervisors who in turn call an election, re- quiring 2/3 vote; Board of Directors prescribes terms of entry	--	Provided
Special	--	--	Initial district has power only to prepare plan for later submission	Provided

Table E

**ESTIMATED CAPITAL REQUIREMENTS AND OPERATING RESULTS
BY MAJOR SEGMENTS OF FIRST-STAGE SYSTEM--OPTIMUM PLAN
FULL YEAR OF SEASONED OPERATION**

	1		2		3		4	5	6	7		8		9		10		11		12	13		14	15	16			
							Capital Requirements																					
	Route Miles ^{1/}	Percent	Car Miles ^{1/} (000's)	Percent	Rt-of-Way and Construction ^{3/} (000's)	Percent	Cars ^{2/} (000's)	Yards and Shops ^{2/} (000's)	Other ^{4/} (000's)	Total (000's)	Percent	Passenger Miles ^{1/}	Percent	Revenue ^{1/} (000's)	Percent	Operating Expense (000's)	Percent	Operating Income ^{1/} (000's)	Percent	Debt Service ^{5/} (000's)	Financial Deficit ^{6/} (000's)	Percent	Deficit per Passenger Mile	Revenue per Passenger Mile	Total Cost per Passenger Mile			
Totals	123.12	100.00	12,218	100.00	\$691,595	100.00	\$96,000	\$21,680	\$67,000	\$873,280	100.00	1,164,598	100.00	\$28,740	100.00	\$18,826	100.00	\$9,914	100.00	\$39,000	\$29,086	100.00	2.50¢	2.44¢	4.94¢			
San Francisco Terminal	3.13	2.54	1,653	3.91	62,838	9.09	3,519	951	5,595	72,903	8.37	49,349	4.24	1,217	4.23	736	3.91	481	4.85	3,257	2,776	9.54	5.63	2.45	8.08			
Transbay Crossing	3.80	3.09	2,006	4.75	72,902	10.54	4,275	1,155	6,512	84,844	9.72	68,774	5.91	2,152	7.49	894	4.75	1,258	12.69	3,790	2,532	8.71	3.68	3.10	6.78			
Oakland Terminal	7.35	5.97	3,157	7.47	76,184	11.02	6,723	1,816	7,042	91,765	10.51	127,961	10.99	3,746	13.03	1,407	7.47	2,339	23.59	4,099	1,760	6.05	1.38	5.78	7.16			
Richmond-Decoto Route Segment 1 ^{7/}	30.39	24.68	12,029	28.47	133,950	19.37	25,623	6,922	13,836	180,331	20.65	307,733	26.42	8,334	29.00	5,360	28.47	2,974	30.00	8,054	5,080	17.47	1.65	2.71	4.36			
2	5.12	4.16	2,028	4.80	23,629	3.42	4,320	1,167	2,419	31,535	3.61	27,188	2.33	697	2.43	904	4.80	(207)	(2.09)	1,408	1,615	5.56	5.94	2.54	8.48			
3	7.13	5.79	3,318	7.85	44,551	6.44	7,065	1,909	4,449	57,974	6.64	105,638	9.07	3,081	10.72	1,478	7.85	1,603	16.17	2,590	987	3.39	0.93	2.89	3.82			
4	18.14	14.73	6,683	15.82	65,770	9.51	14,238	3,846	6,968	90,822	10.40	174,907	15.02	4,556	15.85	2,978	15.82	1,578	15.92	4,056	2,478	8.52	1.42	2.58	1.01			
Oakland-Concord Route Segment 1	20.94	17.00	5,475	12.96	87,697	12.68	11,664	3,152	8,515	111,028	12.71	93,977	8.07	1,708	5.95	2,440	12.96	(732)	(7.39)	4,957	5,689	19.55	6.05	1.82	7.87			
2	2.66	2.16	730	1.73	17,701	2.56	1,557	421	1,634	21,313	2.44	19,363	1.66	459	1.60	325	1.73	134	1.35	952	818	2.81	4.22	2.35	6.57			
3	2.90	2.35	795	1.88	23,562	3.41	1,692	457	2,137	27,848	3.19	20,723	1.78	387	1.35	354	1.88	33	.33	1,244	1,111	4.16	5.84	1.85	7.69			
4	8.18	6.64	2,173	5.14	31,089	4.49	4,626	1,250	3,069	40,034	4.58	40,504	3.48	677	2.36	969	5.15	(292)	(2.95)	1,786	2,078	7.14	5.13	1.66	6.79			
5	7.20	5.85	1,777	4.21	15,345	2.22	3,789	1,024	1,675	21,833	2.50	13,387	1.15	185	0.64	792	4.20	(607)	(6.12)	975	1,582	5.44	11.82	1.37	13.19			
Peninsula Route Segment 1	34.91	28.36	14,283	28.93	136,836	19.78	30,420	8,218	14,572	190,046	21.75	428,224	36.76	8,771	30.52	6,365	33.81	2,406	24.28	8,482	6,076	20.89	1.12	2.05	3.47			
2	5.50	4.47	2,904	6.87	35,051	5.07	6,183	1,671	3,564	46,469	5.32	109,766	9.42	2,191	7.62	1,294	6.87	897	9.05	2,075	1,178	1.15	1.07	1.98	3.05			
3	11.39	9.25	5,029	11.90	33,634	4.86	10,710	2,893	3,926	51,163	5.86	194,634	16.71	3,915	13.62	2,242	11.91	1,673	16.88	2,285	612	2.10	0.31	1.99	2.30			
4	13.69	11.12	4,790	11.34	56,253	8.13	10,206	2,757	5,735	74,951	8.56	120,581	10.35	2,606	9.07	2,134	11.34	472	4.76	3,338	2,866	9.86	2.38	2.15	4.53			
5	4.33	3.52	1,560	3.69	11,898	1.72	3,321	897	1,347	17,463	2.01	3,243	0.28	59	0.21	695	3.69	(636)	(6.41)	784	1,420	4.88	43.79	1.80	45.59			
Marin Route Segment 1	22.60	18.36	3,645	8.64	121,188	17.52	7,776	2,471	10,928	142,363	16.31	88,580	7.61	2,812	9.78	1,624	8.63	1,188	11.98	6,361	5,173	17.79	5.84	3.17	9.01			
2	3.96	3.22	657	1.56	40,656	5.88	1,404	446	3,531	46,037	5.27	25,296	2.17	826	2.87	293	1.56	533	5.38	2,055	1,522	5.23	6.02	3.23	9.25			
3	1.79	1.45	297	0.71	16,141	2.33	639	203	1,414	18,397	2.11	5,689	0.49	189	0.66	132	0.70	57	0.57	823	766	2.64	13.16	3.29	16.75			
4	16.85	13.69	2,691	6.37	\$ 64,391	9.31	\$ 5,733	\$ 1,822	\$ 5,983	\$ 77,929	8.93	57,595	4.95	\$ 1,797	6.25	\$ 1,199	6.37	\$ 598	6.03	\$ 3,483	\$ 2,885	9.92	5.01¢	6.71¢	11.72¢			

1/ Source: Parsons, Brinckerhoff, Hall and Macdonald—Engineers—New York; revenue and expense allocations are necessarily somewhat arbitrary since the segments of the system cannot operate independently.
2/ Source: Parsons, Brinckerhoff, Hall and Macdonald—Engineers—New York; value of cars required by fourth year of operation; allocated on basis of car miles.

3/ Source: Parsons, Brinckerhoff, Hall and Macdonald—Engineers—New York; allocated on basis of car miles.
4/ Source: Estimated by Stanford Research Institute as follows: working capital, \$5 million; contingencies, \$7 million; costs of financing, \$5 million; administrative expenses to prepare for operation, \$2.5 million; interest on debt of 2.5 percent per year during construction, \$47.5 million; total, \$67 million; allocated on basis of total of other capital requirements.

5/ Estimated by Stanford Research Institute on basis of 2.5 percent 5-to 30-year serial bonds, to be retired by level annual payments for interest and principal of about \$39 million, of which about \$8 million is to be provided out of transit revenues; allocated on basis of total capital requirements.
6/ Debt service, minus operating income.

7/ Route segments are defined in Table

Table F

SCHEDULE OF AMORTIZATION AND INTEREST ON DEBT
2.5 PERCENT--5- TO 30-YEAR SERIAL BONDS
OPTIMUM PLAN--FIRST-STAGE SYSTEM

Capital Expenditures Exclusive of Interest During Construction						\$825,405
Public support--9 years @ \$31,000						\$279,000
Less: Interest during construction--years 1 to 5				\$48,028		
Interest--years 6 to 9				<u>67,587</u>	<u>115,615</u>	
Balance applied to debt retirement--years 6 to 9						163,385
Operating income applied to debt retirement--years 6 to 9						29,000
Debt retired--years 6 to 9						<u>192,385</u>
Debt Outstanding at End of Year 9						\$633,020

Year	Public Support	Interest	Balance Applied to Debt Retired	Operating Income Applied to Debt Retired	Debt Retired	Debt Outstanding
1 to 9	\$279,000	\$115,615	\$163,385	\$29,000	\$192,385	\$633,020
10	31,000	15,826	15,174	8,000	23,174	609,846
11	31,000	15,246	15,754	8,000	23,754	586,092
12	31,000	14,652	16,348	8,000	24,348	561,744
13	31,000	14,044	16,956	8,000	24,956	536,788
14	31,000	13,420	17,580	8,000	25,580	511,208
15	31,000	12,780	18,220	8,000	26,220	484,988
16	31,000	12,125	18,875	8,000	26,875	458,113
17	31,000	11,453	19,547	8,000	27,547	430,566
18	31,000	10,764	20,236	8,000	28,236	402,330
19	31,000	10,058	20,942	8,000	28,942	373,388
20	31,000	9,335	21,665	8,000	29,665	343,723
21	31,000	8,593	22,407	8,000	30,407	313,316
22	31,000	7,833	23,167	8,000	31,167	282,149
23	31,000	7,054	23,946	8,000	31,946	250,203
24	31,000	6,255	24,745	8,000	32,745	217,458
25	31,000	5,436	25,564	8,000	33,564	183,894
26	31,000	4,597	26,403	8,000	34,403	149,491
27	31,000	3,737	27,263	8,000	35,263	114,228
28	31,000	2,856	28,144	8,000	36,144	78,084
29	31,000	1,952	29,048	8,000	37,048	41,036
30	31,000	1,026	29,974	11,062	41,036	0
Total	\$930,000	\$304,657	\$625,343	\$200,062	\$825,405	

1/ Details for years 1 to 5 are shown on Table 6 on which this schedule is based.

Table G

ANNUAL AMOUNTS OF PUBLIC SUPPORT NEEDED FOR DEBT SERVICE ON SERIAL BONDS
 UNDER CONDITIONS ASSUMED FOR BAY AREA RAPID TRANSIT SYSTEM^{1/}
 Number of Years and Interest Rates as Indicated
 (Thousands of Dollars)

Term of Bonds (years)	Rate of Interest						
	2.0%	2.25%	2.5%	2.75%	3.0%	3.5%	4.0%
5-15	\$56,085	\$56,929	\$57,784	\$58,637	\$59,496	\$61,220	\$62,950
5-20	42,393	43,332	44,288	45,242	46,207	48,142	50,100
5-25	34,228	35,246	36,272	37,304	38,346	40,448	42,584
5-30	28,832	29,906	30,995	32,088	33,200	35,445	37,729
5-35	25,013	26,141	27,283	28,437	29,602	31,974	34,391
5-40	22,186	23,350	24,546	25,749	26,969	29,457	31,988

Note: To obtain the total amount of public support for principal and interest, multiply the annual amount by the number of years to final maturity. For example, if serial bonds were to run from 5 to 30 years at 2.5 percent interest, the total amount of public support would be \$929,850,000 (that is, \$30,995,000 x 30).

^{1/} Table 6 contains by years the schedule of capital requirements and the operating estimates upon which these annual payments are based.

Table H

**ANNUAL PAYMENT REQUIRED TO RETIRE DEBT OF \$1
IN SPECIFIED NUMBER OF YEARS AT VARYING INTEREST RATES
FROM 2 PERCENT TO 4 PERCENT PER YEAR**

Number of Years	Annual Payment at Rate of Interest Indicated						
	2.0%	2.25%	2.5%	2.75%	3.0%	3.5%	4.0%
1	1.02000	1.02250	1.02500	1.02750	1.03000	1.03500	1.04000
2	0.51505	0.51694	0.51883	0.52072	0.52261	0.52640	0.53020
3	.34675	.34844	.35014	.35183	.35353	.35693	.36035
4	.26262	.26422	.26582	.26742	.26903	.27225	.27549
5	.21216	.21370	.21525	.21680	.21835	.22148	.22463
6	.17853	.18003	.18155	.18307	.18460	.18767	.19076
7	.15451	.15600	.15750	.15900	.16051	.16354	.16661
8	.13651	.13798	.13947	.14096	.14246	.14548	.14853
9	.12252	.12398	.12546	.12694	.12843	.13145	.13449
10	.11133	.11279	.11426	.11574	.11723	.12024	.12329
11	.10218	.10364	.10511	.10659	.10808	.11109	.11415
12	.09456	.09602	.09749	.09897	.10046	.10348	.10655
13	.08812	.08958	.09105	.09253	.09403	.09706	.10014
14	.08260	.08406	.08554	.08702	.08853	.09157	.09467
15	.07783	.07929	.08077	.08226	.08377	.08683	.08994
16	.07365	.07512	.07660	.07810	.07961	.08268	.08582
17	.06997	.07144	.07293	.07443	.07595	.07904	.08220
18	.06670	.06818	.06967	.07118	.07271	.07582	.07899
19	.06378	.06526	.06676	.06828	.06981	.07294	.07614
20	.06116	.06264	.06415	.06567	.06722	.07036	.07358
21	.05878	.06028	.06179	.06332	.06487	.06804	.07128
22	.05663	.05813	.05965	.06119	.06275	.06593	.06920
23	.05467	.05617	.05770	.05924	.06081	.06402	.06731
24	.05287	.05438	.05591	.05747	.05905	.06227	.06559
25	.05122	.05274	.05428	.05584	.05743	.06067	.06401
26	.04970	.05122	.05277	.05434	.05594	.05921	.06257
27	.04829	.04982	.05138	.05296	.05456	.05785	.06124
28	.04699	.04853	.05009	.05168	.05329	.05660	.06001
29	.04578	.04732	.04889	.05049	.05211	.05545	.05888
30	.04465	.04620	.04778	.04938	.05102	.05437	.05783
31	.04360	.04515	.04674	.04835	.05000	.05337	.05686
32	.04261	.04417	.04577	.04739	.04905	.05244	.05595
33	.04169	.04326	.04486	.04649	.04816	.05157	.05510
34	.04082	.04240	.04401	.04565	.04732	.05076	.05431
35	.04000	.04159	.04321	.04486	.04654	.05000	.05358
36	.03923	.04083	.04245	.04411	.04580	.04928	.05289
37	.03851	.04011	.04174	.04341	.04511	.04861	.05224
38	.03782	.03943	.04107	.04275	.04446	.04798	.05163
39	.03717	.03879	.04044	.04212	.04384	.04739	.05106
40	.03656	.03818	.03984	.04153	.04326	.04683	.05052
50	.03182	.03352	.03526	.03704	.03887	.04263	.04655
60	.02877	.03054	.03235	.03422	.03613	.04009	.04420
70	.02667	.02850	.03040	.03234	.03434	.03846	.04275
80	.02516	.02706	.02903	.03104	.03311	.03738	.04181
90	.02405	.02601	.02804	.03012	.03226	.03666	.04121
100	0.02320	0.02523	0.02731	0.02945	0.03165	0.03616	0.04081

Note: To obtain amount of annual payment to retire a debt of a given amount in a given period at given interest rate, multiply the amount of the initial debt by the appropriate number in this table. E.g., a debt of \$700,000,000 at 2 percent to be retired in 40 years would take annual payments of \$25,592,000. This is obtained by the following computation:
 $\$700,000,000 \times \$0.03656 = \$25,592,000.$

Table I
TOTAL LOCAL PROPERTY TAX LEVIES IN BAY AREA COUNTIES
FOR SELECTED YEARS 1940-1954

County	1954	Percent of 1954 Total	1953	1952	1951	1950	1949	1948	1947	1946	1945	1944	1943	1940
Alameda	\$ 68,866	24.67	\$ 58,315	\$ 52,705	\$ 50,936	\$ 47,784	\$ 45,051	\$ 40,144	\$ 34,205	\$ 25,613	\$ 24,143	\$ 24,086	\$ 23,452	\$ 22,039
Contra Costa	34,963	12.53	28,262	24,830	21,320	18,826	15,886	11,493	9,366	7,277	6,546	5,929	5,572	4,562
Marin	8,393	3.01	6,374	5,713	5,041	4,227	3,899	3,481	2,730	2,358	2,167	1,969	2,005	1,832
Napa	3,143	1.13	2,896	2,666	2,551	1,951	1,907	1,608	1,377	1,147	1,028	978	848	736
San Francisco	83,532	29.93	68,905	69,616	65,694	60,271	60,089	51,243	46,976	40,754	39,252	36,420	37,178	32,335
San Mateo	30,692	11.00	25,329	20,159	17,598	15,921	14,757	10,259	8,171	6,462	5,729	5,124	4,825	4,292
Santa Clara	33,744	12.09	27,188	23,727	19,887	18,303	15,823	13,008	10,809	7,870	7,227	6,815	6,618	6,124
Solano	5,811	2.08	5,167	4,694	4,320	3,796	3,506	3,102	2,762	2,488	2,049	1,761	1,682	1,297
Sonoma	9,949	3.56	9,032	8,195	7,335	6,177	5,981	5,281	4,451	3,223	2,940	2,777	2,793	2,380
Total	\$ 279,093	100.00	\$ 231,468	\$ 212,305	\$ 194,682	\$ 177,256	\$ 166,899	\$ 139,619	\$ 120,847	\$ 97,192	\$ 91,081	\$ 85,859	\$ 84,973	\$ 75,597

Sources: California Taxpayers' Association, Incorporated, The Tax Digest, May 1950 and April 1954; and California State Board of Equalization.

Table J

PASSENGERS CARRIED BY THE TRANSIT INDUSTRY
IN THE UNITED STATES 1929-1954

Year	Electric Railways	Trolley Coaches	Motor Buses	Total
1929	14,358	5	2,622	16,985
1931	11,583	28	2,313	13,924
1933	9,207	45	2,075	11,327
1935	9,512	96	2,618	12,226
1937	9,468	289	3,489	13,246
1939	8,539	445	3,853	12,837
1941	8,502	652	4,931	14,085
1942	9,856	899	7,245	18,000
1943	11,806	1,175	9,019	22,000
1944	12,137	1,231	9,646	23,017
1945	12,124	1,244	9,886	23,524
1946	11,862	1,311	10,199	23,372
1947	10,852	1,356	10,322	22,540
1948	9,112	1,528	10,728	21,368
1949	7,185	1,661	10,162	19,008
1950	6,168	1,658	9,420	17,246
1951	5,290	1,633	9,202	16,125
1952	4,601	1,640	8,878	15,119
1953	4,076	1,566	8,260	13,902
1954	3,401	1,367	7,624	12,392

Source: Moody's Transportation Manual, 1955.

Table K

RESULTS OF TRANSIT OPERATIONS
IN THE UNITED STATES 1935-1954

Year	Operating Revenues	Operating Expenses	Net Revenue	Taxes	Operating Income	Operating Expenses as a Percent of Revenue (Inc. Depreciation)
1935	\$ 681,400	\$ 534,930	\$146,470	\$ 50,458	\$ 96,012	78.50
1936	727,900	565,180	162,720	56,920	105,800	77.65
1937	733,500	588,680	144,820	63,505	81,315	80.26
1938	700,800	579,690	121,110	65,723	55,387	82.72
1939	720,700	586,600	134,100	67,499	66,601	81.39
1940	737,000	598,030	138,970	62,688	76,282	81.14
1941	800,300	644,260	156,040	66,803	89,237	80.50
1942	1,040,000	769,390	270,610	128,650	141,960	73.98
1943	1,294,000	932,970	361,030	186,340	174,690	72.10
1944	1,362,300	1,012,070	350,230	189,250	160,980	74.29
1945	1,380,400	1,067,140	313,260	164,530	148,730	77.31
1946	1,397,100	1,129,430	267,670	129,020	138,650	80.85
1947	1,390,000	1,238,740	152,060	104,940	47,120	89.07
1948	1,488,600	1,349,651	144,949	101,210	43,739	90.26
1949	1,490,900	1,338,327	152,573	88,908	63,665	89.77
1950	1,452,100	1,296,687	155,413	89,044	66,369	89.29
1951	1,472,700	1,331,272	141,428	95,340	46,088	90.40
1952	1,501,300	1,369,565	131,735	101,986	29,749	91.23
1953	1,513,000	1,370,700	142,400	97,350	45,050	90.59
1954	1,471,800	1,337,260	134,540	89,700	44,480	90.86

Source: Moody's Transportation Manual, 1955.

Table L

TOTAL AND PER CAPITA PERSONAL INCOME, TAXABLE SALES,
AND SERVICE STATION SALES IN BAY AREA COUNTIES FOR RECENT YEARS

Area	Total	Alameda	Contra Costa	Marin	Napa	San Francisco	San Mateo	Santa Clara	Solano	Sonoma
Personal Income, 1952 ^{1/}										
Nine Counties (000's)	\$6,049,500	\$1,684,700	\$457,000	\$182,000	\$68,800	\$2,171,800	\$576,000	\$530,700	\$230,000	\$148,200
Percent	100.0	27.85	7.55	3.01	1.14	35.90	9.52	8.77	3.81	2.45
Per capita	\$2,098	\$2,144	\$1,377	\$1,837	\$1,349	\$2,799	\$2,062	\$1,592	\$1,953	\$1,323
Six Counties (000's)	\$5,602,200	\$1,684,700	\$457,000	\$182,000	--	\$2,171,800	\$576,000	\$530,700	--	--
Percent	100.0	30.07	8.16	3.25	--	38.77	10.28	9.47	--	--
(Population, mid-1952) ^{2/}	2,886,600	785,900	331,900	99,100	5,000	776,000	279,400	333,400	117,900	112,000
Taxable Retail Sales, 1954-1955 ^{3/}										
Nine Counties (000's)	\$4,137,170	\$1,136,056	\$268,816	\$93,681	\$53,209	\$1,539,362	\$338,837	\$472,258	\$99,765	\$135,186
Percent	100.0	27.46	6.50	2.26	1.29	37.21	8.19	11.41	2.41	3.27
Per capita	\$1,329	\$1,343	\$792	\$878	\$935	\$1,948	\$1,028	\$1,182	\$824	\$1,090
Six Counties (000's)	\$3,849,010	\$1,136,056	\$268,816	\$93,681	--	\$1,539,362	\$338,837	\$472,258	--	--
Percent	100.0	29.51	6.98	2.43	--	39.99	8.80	12.27	--	--
(Population, Jan. 1, 1955) ^{2/}	3,113,200	809,300	348,900	106,100	53,200	776,400	301,900	355,500	124,600	116,400
Service Station Sales, 1953 ^{1/}										
Nine Counties (000's)	\$327,546	\$56,104	\$54,805	\$7,056	\$4,553	\$123,269	\$26,668	\$27,112	\$14,908	\$13,071
Percent	100.0	17.13	16.73	2.15	1.39	37.63	8.14	8.28	4.55	3.99
Per capita	\$109	\$69	\$157	\$67	\$86	\$159	\$88	\$76	\$120	\$112
Six Counties (000's)	\$295,014	\$56,104	\$54,805	\$7,056	--	\$123,269	\$26,668	\$27,112	--	--
Percent	100.0	19.02	18.58	2.39	--	41.78	9.04	9.19	--	--
(Population, mid-1953) ^{2/}	2,992,300	809,300	348,900	106,100	53,200	776,400	301,900	355,500	124,600	116,400

^{1/} California State Chamber of Commerce, California Blue Book, 1954.

^{2/} Population estimates based on data from California State Department of Finance.

^{3/} California State Board of Equalization.

Table M

CITY AND COUNTY DISBURSEMENTS (GENERAL AND DISTRICTS)
CLASSIFIED ACCORDING TO GOVERNMENT FUNCTIONS PERFORMED,
BAY AREA COUNTIES, FISCAL YEAR ENDING JUNE 30, 1954

County	General Government	Percent	Protection to Persons and Property	Percent	Health and Sanitation	Percent	Highways Bridges, Etc.	Percent	Recreation	Percent	Charities and Corrections	Percent	Miscellaneous	Percent	Education ^{1/}	Percent	Total ^{2/}	Percent
Alameda	\$35,919	23.08	\$19,964	12.83	\$ 4,353	2.80	\$11,277	7.24	\$ 9,364	6.02	\$ 32,725	21.02	\$ 8,700	5.58	\$ 33,359	21.43	\$155,661	100.00
Contra Costa	3,845	6.79	6,812	12.02	3,903	6.89	5,085	8.97	537	0.95	11,331	20.00	2,285	4.03	22,866	40.35	56,664	100.00
Marin	1,231	10.66	1,530	13.25	1,261	10.92	1,349	11.68	166	1.44	2,153	18.64	213	1.84	3,645	31.57	11,548	100.00
Napa	528	7.83	659	9.77	244	3.62	966	14.33	61	0.90	1,713	25.40	223	3.31	2,349	34.84	6,743	100.00
San Francisco	8,683	6.67	22,054	16.94	5,239	4.02	8,501	6.53	5,863	4.50	30,722	23.60	16,346	12.55	32,791	25.19	130,199	100.00
San Mateo	3,914	10.63	5,528	15.01	2,565	6.96	3,387	9.19	1,089	2.96	6,897	18.72	1,178	3.20	12,278	33.33	36,836	100.00
Santa Clara	3,835	8.61	6,181	13.88	2,039	4.58	4,369	9.81	1,043	2.34	14,262	32.03	2,073	4.65	10,731	24.10	44,533	100.00
Solano	994	6.28	2,319	14.65	580	3.66	1,498	9.46	364	2.30	2,858	18.06	349	2.20	6,867	43.39	15,829	100.00
Sonoma	1,223	5.71	1,624	7.58	1,152	5.38	2,304	10.76	304	1.42	6,447	30.10	559	2.61	7,804	36.44	21,417	100.00
Total	\$60,172	12.55	\$66,671	13.91	\$21,336	4.45	\$38,736	8.08	\$18,791	3.92	\$109,108	22.76	\$31,926	6.66	\$132,690	27.67	\$479,430	100.00

^{1/} Includes actual direct city and county disbursements and budgeted expenditures for school districts.

^{2/} Does not include payment of interest on debt, payment of redemption of debt, payments from proceeds of debt obligations, trust funds, agency transactions for state, and transactions for cities, other counties, and districts.

Sources: State of California, State Controller, Annual Report of Financial Transactions Concerning Cities and Counties of California, fiscal year 1953-1954. California Taxpayers' Association, The Tax Digest, February 1954.

Table N

DETAILED STATEMENT OF EXPENDITURES AND RECEIPTS
FOR ROAD AND STREET PURPOSES BY SOURCE OF FUNDS,
BAY AREA COUNTIES, FISCAL YEAR ENDING JUNE 30, 1954

	Total	Alameda	Contra Costa	Marin	Napa	San Francisco	Santa Mateo	Santa Clara	Solano	Sonoma
Expenditures										
State Highway Dept. ^{2/}										
Construction, reconstruction, and improvement	\$51,012	\$13,798	\$5,761	\$3,621	\$465	\$14,611	\$6,266	\$3,173	\$979	\$2,317
Maintenance	3,943	689	526	276	157	194	540	463	692	496
County										
Total government	17,755	2,924	1,016	843	680	3,431	1,221	1,045	1,261	1,636
Private subdividers	5,397	2,000	1,426	608	87		217	1,150		109
City										
Total government	26,633	19,313	2,465	604	303	7,166	1,911	2,364	609	755
Private	7,848	1,555	965	80	51		2,247	2,113	500	62
Total Road and Street Expenditures	\$112,588	\$31,279	\$14,899	\$6,032	\$1,716	\$25,402	\$12,498	\$11,711	\$3,742	\$3,496
Total Public Expenditures	99,393	27,724	12,708	5,344	1,605	25,402	9,994	8,140	3,212	1,244
Sources of Revenue ^{3/}										
County										
Total from state	\$12,779	\$3,215	\$1,133	\$306	\$195	\$2,499	\$1,261	\$1,813	\$637	\$1,218
Apportionments from state highway users' tax fund	11,976	3,343	1,129	161	351	2,499	1,261	1,637	543	811
Reimbursements received for state's share of cost of road projects	266		11	42	4			148	41	7
Motor vehicle license fees expended for road projects	547				167					870
Federal government	8								8	
State and federal gov't. for secondary roads	637	121		62			9	92	166	147
Total from local county sources	7,957	363	1,344	229	108	768	291	290	376	287
Local taxes	2,906		1,034	158	71				111	61
Sale of bonds	2,639		2,639							
Traffic fines	1,738	342	148	56	89	141	75	299	177	37
Other local	163	121	(8)	17		17	126	81	88	21
City										
Total from state	8,162	2,922	720	146	371	2,399	913	680	179	131
Apportionments from state highway users' tax fund	6,569	1,938	661	140	32	2,399	680	635	159	51
Reimbursements received for state's share of cost of road projects	700	689	15				1	1		
Motor vehicle license fees expended for road projects	803	39	184	1	119		218	26		16
Other receipts from state	90	65					1	21		
Total from local city sources	19,286	6,967	1,419	146	140	6,278	1,015	1,003	502	198
Local taxes	9,945	3,759	911	392	119	1,917	860	1,136	151	148
Sale of bonds	5,373	1,608				3,663	2	130		
Traffic fines	2,079	1,007	57	15	21		145	67	48	3
Other local	1,889	293	1	138		1,358	1	261		
Grand Total of Revenues from Local County and City Sources	\$26,343	\$7,330	\$5,763	\$671	\$248	\$7,046	\$1,214	\$8,313	\$878	\$880

^{1/} State expenditures include expenditures of contributions from local sources. To avoid double counting, city and county expenditures omit contributions to other units of government for road purposes. City and county receipts include contributions from the state as shown, but omit receipts from other units of government.

^{2/} State of California, Department of Public Works, Division of Highways, Eighth Annual Report--January 1955.

^{3/} State of California, State Controller, Annual Report of Financial Transactions Concerning Streets and Roads of Cities and Counties of California, Fiscal Years 1953-1954.

Table O

POPULATION IN TRANSIT ZONE, IN CITIES, AND OUTSIDE CITIES,
BAY AREA COUNTIES, 1955

Area	Total	Alameda	Contra Costa	Marin	Napa	San Francisco	San Mateo	Santa Clara	Solano	Sonoma
Four-Mile Transit Zone ^{1/}	2,003,700	680,800	161,300	52,600	--	794,900	246,000	68,100	--	--
Percent	100.0	33.98	8.05	2.63	--	39.67	12.28	3.40	--	--
Nine Counties	3,174,500	852,700	343,400	112,700	57,200	794,900	337,300	425,500	124,400	126,400
Percent (July 1955)	100.0	26.86	10.82	3.55	1.80	25.04	10.63	13.40	3.92	3.98
Six Counties	2,866,500	852,700	343,400	112,700	--	794,900	337,300	425,500	--	--
Percent (July 1955)	100.0	29.75	11.98	3.93	--	27.73	11.77	14.84	--	--
Inside Cities (9 Counties)	2,328,900	690,500	200,400	52,600	19,000	794,900	246,000	223,900	61,500	40,100
Percent (March 1955)	100.0	29.65	8.60	2.26	0.82	34.13	10.56	9.61	2.64	1.72
Outside Cities (9 Counties)	845,600	162,200	143,000	60,100	38,200	--	91,300	201,600	62,900	86,300
Percent	100.0	19.18	16.91	7.11	4.52	--	10.80	23.84	7.44	10.21
Inside Cities (6 Counties)	2,208,300	690,500	200,400	52,600	--	794,900	246,000	223,900	--	--
Percent	100.0	31.27	9.07	2.38	--	36.00	11.14	10.14	--	--
Outside Cities (6 Counties)	658,200	162,200	143,000	60,100	--	--	91,300	201,600	--	--
Percent	100.0	24.64	21.72	9.13	--	--	13.87	30.63	--	--

^{1/} The transit zone data were estimated by Stanford Research Institute. The zone includes only incorporated cities; inclusion of all population within 4 miles of transit lines would probably add about 5 percent in the zone.

Source: State of California, State Controller.

Table P

ASSESSSED VALUE IN TRANSIT ZONE^{1/}
AND TOTAL AND PER CAPITA ASSESSED VALUE
AND TAX LEVIES IN BAY AREA COUNTIES

Area	Total	Alameda	Contra Costa	Marin	Napa	San Francisco	San Mateo	Santa Clara	Solano	Sonoma
Assessed Value , 1955-1956										
Four-Mile Transit Zone (000's) ^{2/}	\$3,168,139	\$951,909	\$231,033	\$104,240	--	\$1,264,198	\$497,304	\$119,455	--	--
Percent	100.0	30.05	7.29	3.29	--	39.90	15.70	3.77	--	--
Nine Counties (000's)	\$4,606,348	\$1,079,618	\$613,192	\$135,469	\$58,065	\$1,264,198	\$519,741	\$623,922	\$124,867	\$187,276
Percent	100.0	23.44	13.31	2.94	1.26	27.45	11.28	13.54	2.71	4.07
Per capita	\$1,451	\$1,266	\$1,786	\$1,202	\$1,015	\$1,590	\$1,541	\$1,466	\$1,004	\$1,482
Six Counties (000's)	\$4,236,140	\$1,079,618	\$613,192	\$135,469	--	\$1,264,198	\$519,741	\$623,922	--	--
Percent	100.0	25.49	14.48	3.20	--	29.84	12.27	14.73	--	--
Total Tax Levies, 1954-1955										
Nine Counties (000's)	\$279,093	\$68,866	\$34,963	\$8,393	\$3,143	\$83,532	\$30,692	\$33,744	\$5,811	\$9,949
Percent	100.0	24.67	12.53	3.01	1.13	29.93	11.00	12.09	2.08	3.56
Per capita	\$88	\$81	\$102	\$74	\$55	\$105	\$92	\$79	\$47	\$79
Six Counties (000's)	\$260,190	\$68,866	\$34,963	\$8,393	--	\$83,532	\$30,692	\$33,744	--	--
Percent	100.0	26.47	13.44	3.23	--	32.10	11.80	12.97	--	--

^{1/} Estimated by Stanford Research Institute. This estimate includes only incorporated cities; inclusion of all property within 4 miles of transit lines would probably add 5 to 10 percent in the zone.

^{2/} Assessed values for 1955-1956 in the 4-mile transit zone were obtained by changing 1954-1955 data for each city by percentage of change experienced by county in which city is located.

Table Q

ASSESSED VALUE OF TANGIBLE PROPERTY SUBJECT TO LOCAL TAXATION
IN BAY AREA COUNTIES INSIDE AND OUTSIDE INCORPORATED MUNICIPALITIES
AND TOTAL FOR SELECTED YEARS 1940 TO 1955

	1955	Percent	Average Tax Rate	1954	1953	1952	1951	1950	1949	1948	1947	1946	1945	1944	1943	1940
Alameda	\$1,079,618	23.44	7.76	\$887,776	\$856,180	\$826,928	\$756,073	\$719,193	\$700,669	\$660,061	\$615,913	\$566,608	\$525,854	\$506,030	\$490,371	\$455,205
Inside	917,501	19.92		748,460	729,342	710,657	652,640	627,758	615,468	585,080		507,202	471,832	458,035	444,302	415,253
Outside	162,117	3.52		139,316	126,838	116,271	103,433	91,435	85,201	74,981		59,406	54,022	47,995	46,069	39,952
Contra Costa	613,192	13.31	7.85	445,342	405,392	370,541	334,618	303,064	283,648	254,545	223,752	205,841	197,997	183,264	171,735	132,283
Inside	247,126	5.36		179,818	165,433	154,878	143,327	131,686	124,424	109,404		90,089	88,678	78,349	74,408	54,189
Outside	366,066	7.95		265,524	239,959	215,663	191,291	171,378	159,224	145,141		115,752	109,319	104,915	97,327	78,094
Marin	135,469	2.94	7.73	108,645	102,590	96,617	89,066	81,565	77,994	72,909	68,033	58,953	55,828	54,556	52,842	49,026
Inside	79,959	1.74		61,013	57,578	54,673	51,223	48,114	46,410	43,753		35,533	33,547	32,835	31,679	29,475
Outside	55,510	1.20		47,632	45,018	41,944	37,843	33,451	31,584	29,156		23,420	22,281	21,721	21,163	19,551
Napa	58,065	1.26	5.84	53,856	51,689	49,460	46,752	42,768	41,286	39,453	37,249	32,457	31,693	30,047	28,991	24,026
Inside	23,759	.52		22,226	21,682	20,608	19,752	18,248	17,741	16,883		13,538	13,057	12,368	12,035	8,916
Outside	34,306	.74		31,630	30,007	28,852	27,000	24,520	23,545	22,570		18,919	18,636	17,679	16,956	15,110
San Francisco	1,264,198	27.45	6.74	1,238,981	1,221,373	1,195,202	1,121,477	1,061,714	1,050,830	1,000,119	913,618	860,707	846,625	843,402	833,061	820,546
San Mateo	519,741	11.28	6.45	475,503	445,282	417,983	259,770	231,856	214,141	193,000	173,819	153,289	143,871	140,759	136,889	119,834
Inside	401,307	8.71		367,785	341,371	321,884	194,086	170,942	158,572	141,715		106,788	100,124	97,837	95,228	80,794
Outside	118,434	2.57		107,718	103,911	96,099	65,684	60,914	55,569	51,285		46,501	43,747	42,922	41,661	39,040
Santa Clara	623,922	13.54	6.11	552,185	494,336	455,292	399,091	349,503	326,332	290,461	261,272	221,188	205,056	200,242	192,159	159,177
Inside	401,648	8.72		341,603	300,663	259,600	229,197	201,587	189,000	168,332		126,239	117,407	115,752	112,563	90,276
Outside	222,274	4.82		210,582	193,673	195,692	169,894	147,916	137,332	122,129		94,949	87,649	84,490	79,596	68,851
Solano	124,867	2.71	4.93	117,845	114,296	109,047	97,190	83,842	84,432	80,962	75,408	68,156	66,564	64,647	57,759	42,889
Inside	51,476	1.12		46,034	43,213	39,536	34,528	28,063	26,344	25,248		21,462	19,962	19,251	17,711	13,319
Outside	73,391	1.59		71,811	71,083	69,511	62,662	55,779	58,088	55,714		46,694	46,602	45,396	40,048	29,570
Sonoma	187,276	4.07	6.43	154,812	149,047	140,178	126,475	115,022	111,671	103,800	92,445	80,881	77,095	73,804	71,012	66,471
Inside	62,490	1.36		52,553	51,770	50,261	45,791	42,434	41,682	39,004		26,413	24,949	24,390	23,629	22,499
Outside	124,786	2.71		102,259	97,277	89,917	80,684	72,588	69,989	64,796		54,468	52,146	49,414	47,383	43,972
Total	\$4,606,348	100.00		\$4,034,945	\$3,840,191	\$3,661,248	\$3,230,512	\$2,988,527	\$2,891,003	\$2,695,310	\$2,461,509	\$2,248,080	\$2,150,583	\$2,096,751	\$2,034,819	\$1,869,407
Inside	3,449,464	74.89		3,058,473	2,932,425	2,807,299	2,498,021	2,330,546	2,270,471	2,129,538		1,787,971	1,716,181	1,682,219	1,644,616	1,535,267
Outside	1,156,884	25.11		976,472	907,766	853,949	738,491	657,981	620,532	565,772		460,109	434,402	414,532	390,193	334,140

Source: California State Board of Equalization, Annual Reports.

Table R

SOURCES OF INFORMATION
(Partial List)

Allegheny Conference on Community Development	Crocker-Anglo National Bank
Allegheny County Mass Transportation Study Committee	Delaware River Port Authority of Pennsylvania and New Jersey
American Planning and Civic Association	DeLeuw, Cather & Company, Consulting Engineers
American Transit Association	City of Detroit Department of Street Railways
Bank of America	Detroit Chamber of Commerce
Blyth & Company, Investment Bankers	East Bay Municipal Utility District
Boston Metropolitan Transit Authority	The First National Bank of Chicago
Boston Department of Regional Planning	Golden Gate Bridge and Highway District
California Taxpayers' Association	Harris Trust & Savings Bank
State of California Office of the Controller Office of the Attorney General Board of Equalization Department of Public Works Division of Highways Legislature, Legislative Counsel University of California Department of Economics	Harvard University Graduate School of Business Administration Jenkins, Arthur C., Transportation Consultant
California Institute of Technology Department of Economics	City of Los Angeles Department of Water and Power
California Toll Bridge Authority	Los Angeles Chamber of Commerce Traffic and Transit Section
Chicago Transit Authority	Los Angeles Metropolitan Transit Authority

Table R (Continued)

Metropolitan Coach Lines (Los Angeles)	Philadelphia Transportation Company
Metropolitan Rapid Transit Com- mission (New York City)	City of Philadelphia Urban Traffic and Transpor- tation Board
Metropolitan Water District of Southern California	Bureau of Municipal Research
City of Montreal Transportation Commission	Pittsburgh Railways Company
Municipal Finance Officers Association	Portland Traction Company
National Research Council	Port of New York Authority
New Jersey Turnpike Authority	St. Louis and St. Louis County Transit Board of Freeholders
New York City Transit Authority	San Francisco Bay Area Financial Officers of the Governments of all Counties and all Incorporated Cities
New York, Susquehanna and Western Railroad Company	San Francisco Bay Area Council
New York University School of Law School of Commerce, Accounts and Finance	City of San Francisco Board of Supervisors Planning Commission Parking Authority
Northern Trust Company	Stanford University Department of Economics Graduate School of Business
City of Oakland City Attorney	The Tax Foundation
Orrick, Dahlquist, Herrington, and Sutcliffe, Bond Counsellors	The Tax Institute
City of Palo Alto Planning Commission	Toronto Transit Commission
	Transit Board of the City of Cleveland

Table R (Continued)

Transportation Association of
America

United States Government
Department of Commerce
Bureau of Public Roads
Bureau of the Census
Senate Committee on Public Works

Wainwright and Ramsey, Inc.,
Counsellors on Municipal Finance

Dean Witter & Company, Investment
Bankers

U.C. BERKELEY LIBRARIES



C124878417

